MANCHESTER 1824

The University of Manchester

CCaLC© BIOCHEM Manual

July 2011

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1 System requirements

The CCaLC BIOCHEM tool is an Excel-based application run by macros. It was designed and built using the English version of Microsoft Excel for Windows XP. The tool may not run properly on non-English operating systems or on older versions of Excel or Windows. CCaLC BIOCHEM is designed for use on PCs and is not suitable for use on Mac computers.

If on opening the tool, a message appears “The file can be opened as read only”, then:
- click on ‘Read-only’ to open the file
- save the tool under a different name and
- continue using the tool.

Please note that, depending on the speed of your computer, some operations may take longer time to complete. Normally, the hour-glass will indicate that the system is busy. If it appears that there is no response after clicking on an option or action-button or the cursor does not turn into the hour-glass, please wait a few moments as the system is busy and may take some time to complete the action.

The tool will run faster in Excel 2003 than in Excel 2007.

1.1 Users of Excel 2003

In order for the CCaLC BIOCHEM macros to work correctly, the Excel security settings should be set to either Medium or Low. In Excel 2003, on opening the tool, click on 'Enable macros' when prompted.

1.2 Users of Excel 2007/2010

In order for the CCaLC BIOCHEM macros to work correctly, the Excel security settings should be set to either Medium or Low. In Excel 2007, on opening the tool, click on 'Security Warning - Options'and select 'Enable this content'.

To see the CCaLC BIOCHEM menus in Excel 2007, click on the Add-ins tab on the main menu-bar. The menu items will be displayed on the left hand side of the main menu-bar.

To be able to use the Share data menu option (Import and Export options), the default Save option for Excel files should be set as Excel 97-2003 Workbook (*.xls). This can be done by clicking on:
- Excel options;
- selecting Save; and
- chosing the file format: Excel 97-2003 Workbook (*.xls).

2 Compatibility with CCaLC V1.1 and V2.0

CCaLC BIOCHEM is fully compatible with CCaLC V1.1 and V2.0. To transfer studies from V1.1 or V2.0 to CCaLC BIOCHEM:

- Save the study in V1.1 or V2.0 by choosing the menu option *CF Study/Save* CF *study*
- Type the name of the study in the pop-up window and click OK
- Click on the menu option *Share data/Export study* and click in the pop-up window on the study to be exported; the study will be saved in the directory chosen by the user
- Open the CCaLC BIOCHEM tool and click on the menu option *Share data/Import study*; from the dialogue box that pops-up, select the file to be imported
- To view the study imported, click on *BIOCHEM Study/Load study* and then in the pop-up dialogue box click on the radio-button *User-defined* where the imported study should be listed. Click on the study name and then on the OK button to load the study.

3 Tool development credits

CCaLC BIOCHEM was developed by a research group based at the University of Manchester and led by Professor Adisa Azapagic. The following researchers were involved in the project:

- David Amienyo (case studies);
- Haruna Gujba (case studies and databases);
- Harish Jeswani (case studies and databases);
- Anthony Morgan (software development);
- Namy Espinoza-Orias (case studies and databases); and
- Heinz Stichnothe (methodology and case studies).

For further information visit www.ccalc.org.uk or contact:
adisa.azapagic@manchester.ac.uk

4 Acknowledgements

The CCaLC BIOCHEM project was funded by the European Commission (Grant no. SI2.549080-256268).

5 Introduction

The CCaLC BIOCHEM tool focuses on bio-based processes and products. It allows quick and easy estimations of environmental impacts and value added along the supply chains. It takes a life cycle approach and it enables estimation of the following environmental impacts:

- Carbon footprint (or Global warming potential);
- Water footprint;
- Acidification potential;
- Eutrophication potential;
- Ozone layer depletion potential;
- Photochemical smog; and
- Human toxicity potential.

The tool is aimed at SMEs (although it is also suitable for use by large organisations) and has been developed with the following objectives in mind:

- to enable non-expert users to calculate the carbon footprint and other environmental impacts quickly and easily while following internationally accepted LCA standards such as ISO 14044 and PAS2050;
- to reduce the data collection effort by providing comprehensive databases;
- to help identify environmental hot-spots and improvement opportunities; and
- to enable trade offs between environmental impacts and economic costs.

6 CCaLC BIOCHEM tool overview

The tool has been developed in Microsoft Excel and is run by macros. The worksheets are locked and are not accessible to the user. This prevents accidental changes to the databases and other parts of the tool. Information can be entered into the tool via user forms that are activated by clicking buttons at the top of worksheets. The user can navigate around the tool using the links provided.

Figure 1 shows the starting screen for the tool. This screen is arrived at after opening the tool. It is designed to allow the user to quickly access built-in and user studies. The studies available in the tool are organised in the following sections: Bio-fuels; Bio-feedstocks; Food/Drink; and My Studies.

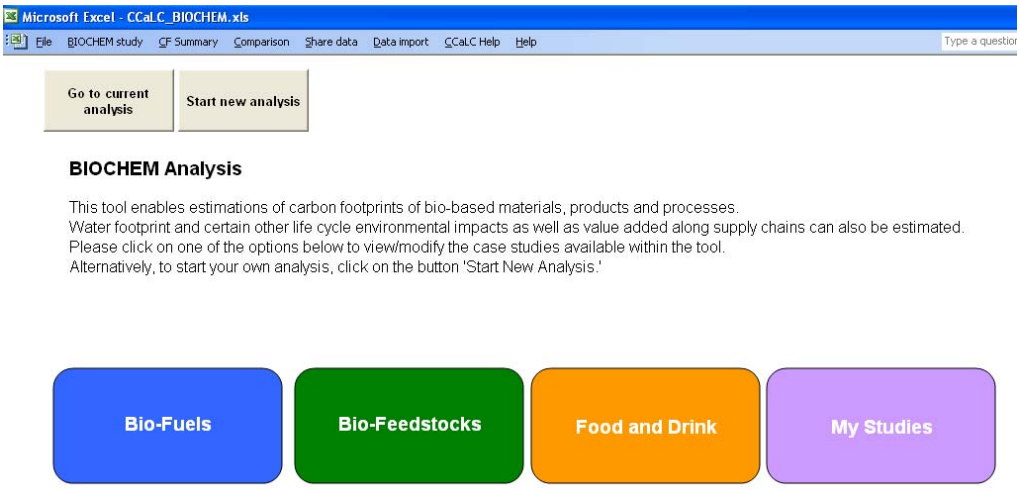


Figure 1 View of CCaLC BIOCHEM start screen

Clicking on one of the boxes in Figure 1 allows the user to select from different studies within that group via a user form. The button ‘My Studies’ allows the user to load any of their previously saved studies. This category will be empty on initially downloading the tool.

Selecting the Bio-fuels box shows a form that allows the user to select from either bio-diesel (from rape-seed) or bio-ethanol (from either sugar-beet or wheat). This is shown in Figure 2.

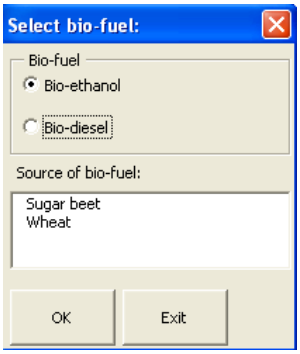


Figure 2 User form allowing the user to choose the bio-fuel study to be loaded

Selecting the Bio-feedstocks box brings up a user form that allows the choice of various types of bio-feedstocks (
Figure 3). The user may also select which allocation methodology (system expansion or mass, energy or economic allocation) has been used for systems with co-products.

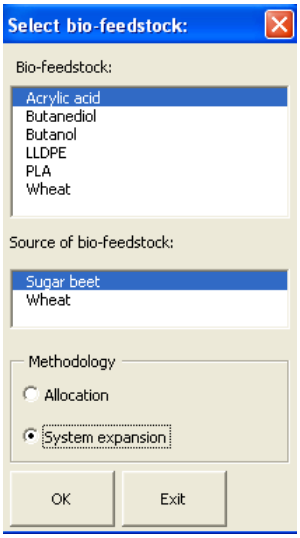


Figure 3 User form allowing the user to choose the bio-feedstock study to be loaded

The button *Go to current analysis* allows the user to go back to the analysis that was last being worked on. If the study is blank (i.e. upon first using the tool or having re-set the data) then this button will have no effect. The button *Start new analysis* re-sets the data in the tool to zero and takes the user to the top level of the tool (Figure 4) where the new study can be started.

Once a study has been loaded, the top level layout of the tool is shown, as depicted in Figure 4. This represents a map of a typical product life-cycle and includes the following stages:

- Raw materials;
- Production;
- Storage;

- Use;
- Transport; and
- Waste.

The user can access any of these stages by clicking on the relevant box. The subsequent levels allow the user to modify information contained at these levels; this is described in more detail later on.

The Excel menu bars and toolbars are largely disabled for the sake of clarity, although the user can still make use of the in-built excel *File/Save* functions to save the tool at any point during the analysis. There are several menus specific to the tool, the functions of which are described later in this manual. The carbon footprint for each stage is shown in red, the value added in blue and the water usage in light green.

CCaLC BIOCHEM contains three databases: CCaLC, Ecoinvent and User database. The CCaLC database consists of publicly available data compiled as part of the CCaLC project and data generated during the course of the project. The Ecoinvent database is a proprietary database that is included in the CCaLC BIOCHEM tool with a kind permission of Ecoinvent. Although the Ecoinvent database is comprehensive, it should be noted that only data relating to Global Warming Potential (i.e. the carbon footprint) are included with the database and there are no data pertaining to other environmental impacts. The full list of data items included in both the CCaLC and Ecoinvent databases can be found in Appendix 1 and 2.

User database is created and populated by the user as explained in the subsequent sections.

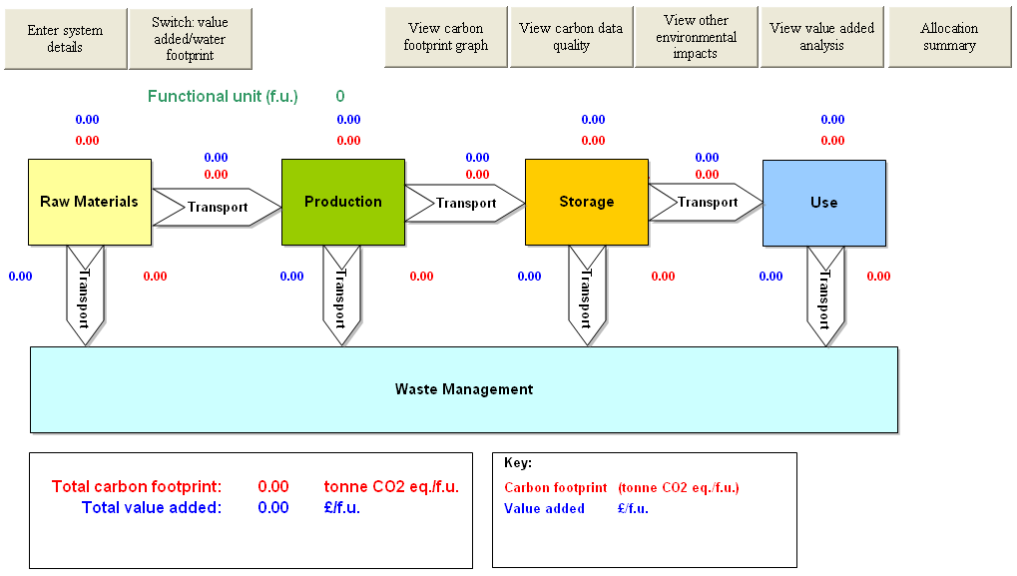


Figure 4 Top-level view in the CCaLC BIOCHEM tool

7 Carbon footprint estimation

The carbon footprint of a system can be calculated in two main ways:

- by starting a new study from scratch, with all the information and data entered by the user step by step or
- by using the built-in case studies, which can be loaded up via the menu option *BIOCHEM Study/Load BIOCHEM study* and then modified according to the user specification.

The following procedure illustrates how the carbon footprint can be estimated within the CCaLC *BIOCHEM* tool, starting a study from scratch. Instructions on how to modify an existing study can be found in section 11.

7.1 Defining system details

Clicking on the *Enter System Details* button at the top of the screen at the top level activates the *System Details* user form (Figure 5). In order to proceed with the analysis, the name of the study and a functional unit must be specified. The latter relates the function of the system to a common unit, e.g. mass, energy, etc. The amount specified for the functional unit will be the amount to which the carbon footprint will be attributed. Any unit may be used in the *Unit* window but it should be noted that all other data must be directly related to this unit. For example, if the functional unit is 0.75 litres of red wine (as illustrated in Figure 5), then the data entered later on must directly correspond to the amounts of materials, energy etc. used to produce 0.75 litres of wine.

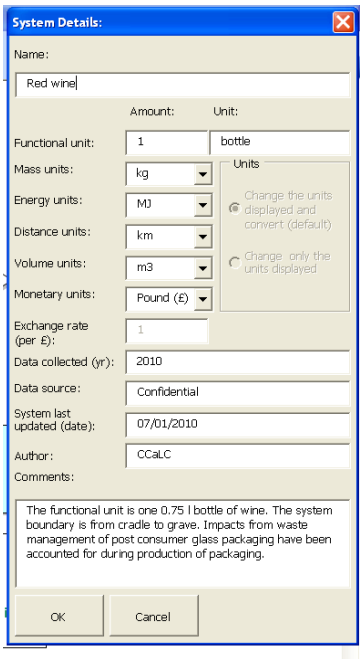


Figure 5 System Details user form

The user can also define different mass (g, kg, tonne), energy (MJ, kWh, BTU), distance (km and miles) and monetary units (£, $, €). The default values are **tonne**, **kWh, km** and **£,** respectively. The units can be changed at any point during the analysis. If using a currency other than £, an exchange rate should be supplied in the textbox. This enables the user to switch between different currency types during the analysis.

NB: The units are not linked to the unit of the Functional Unit defined by the user. The user should ensure that they are working in consistent units at all times.

There are two ways to convert units. This can be specified in the section Units, which lists two options (see Figure 5):

- Change the units displayed and convert (default); and
- Change only the units displayed.

The default setting on the form is to convert units. This means that,should the user change units during the analysis, all amounts already entered will be converted to the new specified unit(s). Should the user require that the amounts entered are left unchanged but only the units displayed are changed (e.g. in the event that data were entered in the wrong units), then the second options should be selected.

Other information on this form is related to the age and source of data, date of conducting the study and the author – however, these are not compulsory but may be useful for transparency and record keeping.

The system details can then be updated by clicking on the *OK* button, after which the whole system is updated. This takes a short while to complete.

7.2 Defining the production stage names

Once the system details have been defined, the next step is to define the production stage names. This will then enable to ‘send’ the raw materials to the specified stages, during the definition of Raw materials stage.

This is carried out by clicking on the *Production* box at the top level of the tool (see Figure 4) which takes the user to the individual production stages (Figure 6). In total, ten production stages can be defined.

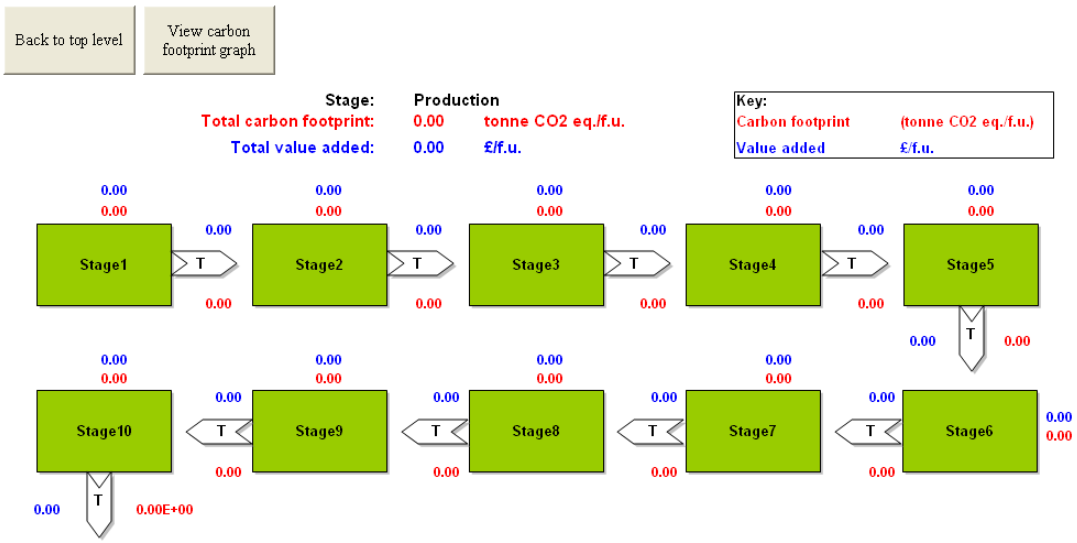


Figure 6 Overview of the Production stage

When the tool is first loaded with no study uploaded, the stage names are displayed as *Stage1, Stage2*…etc. (see Figure 6). The names of the stages can be defined or modified at any point during the analysis as follows:

1. Click on the stage to be modified (Figure 6); this takes the user to that stage with a number of navigation buttons at the top of the screen (as shown in Figure 4);
2. Click on the *Define Stage* button at the top of the screen;
3. Enter the name of the stage in the relevant text box
4. Enter any relevant comments in the C*omments* text box
5. Click *Update.*

Once this is done, the tool will update all instances of the stage name in the analysis. The same procedure should be carried out for the rest of the production steps, until they have all been defined. The next step is then to define the raw materials being used the the different production stages.

It should be noted that the transport arrows do not connect different stages. Rather, they represent the transport of materials from an individual processing stage. Material flows may be transported between any of the processing stages – due to a large number of transport flows and combinations, it is not practical to show all the transport connections graphically, but they are captured in the transport data sheets.

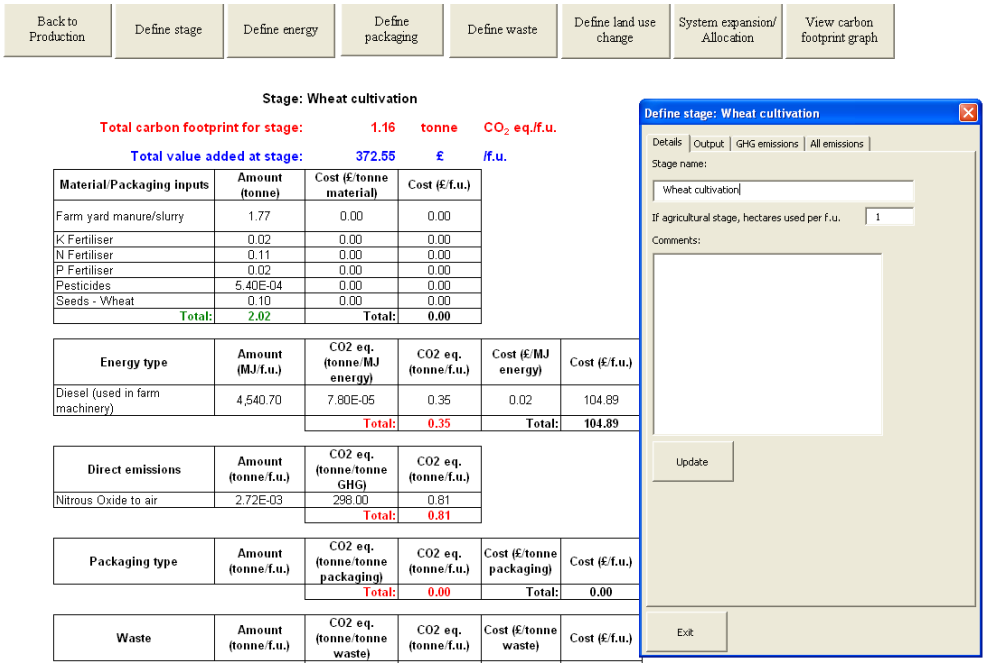


Figure 7 Stage details and *Define Stage* user form

7.3 Defining raw materials

Raw materials are defined by clicking on the *Raw Materials* box on the top level of the tool (Figure 4). The user is than taken to the next level down, showing the tables related to raw materials (Figure 8).

There are four tables which will be populated as the user enters data through the user forms. The data in these four tables are related to:

- raw materials – amounts used and their carbon footprints,
- energy - any additional energy used for raw materials that is not already accounted for within the carbon footprints of the raw materials (e.g. storage and refrigeration of raw materials);
- packaging – amounts used for both raw materials and product(s), together with the carbon footprints of packaging; and
- waste from raw materials and the carbon footprints related to waste management (e.g. due to spillage or perishable nature of raw materials).

The amount of each of these can be modified by clicking on the appropriate button at the top of the screen. The carbon footprint data are also specified here, either via the databases available or by entering user carbon footprint data.

To add a raw material to the analysis:

1. Click on the *Define Materials* button (Figure 8)
2. Select the appropriate database to use (CCaLC, Ecoinvent)

3. From the first drop-down list, select type of raw material (e.g. agricultural inputs, construction materials etc.)
4. Select the required material from the next drop-down list
5. Select the required production stage from the second drop-down list where the raw material will be sent
6. Add the amount of material per functional unit in the textbox (Note: agricultural materials are defined in mass per hectare of land)
7. Select the data quality for the amount used (*high, medium, low*) to indicate how confident you are in the figure used [see Appendix 3 for a description of how the data quality is calculated for the system]
8. Add any comments that are appropriate to this instance of material use (this is optional but is recommended as a reminder for future uses)
9. Add the cost of the raw material, per unit mass, if needed
10. Click the *Update* button.

The Raw material table on the screen will be updated to show the material name, the amount used, the carbon footprint associated with it and its destination. The database section from which the data have been selected is also shown in the tables.

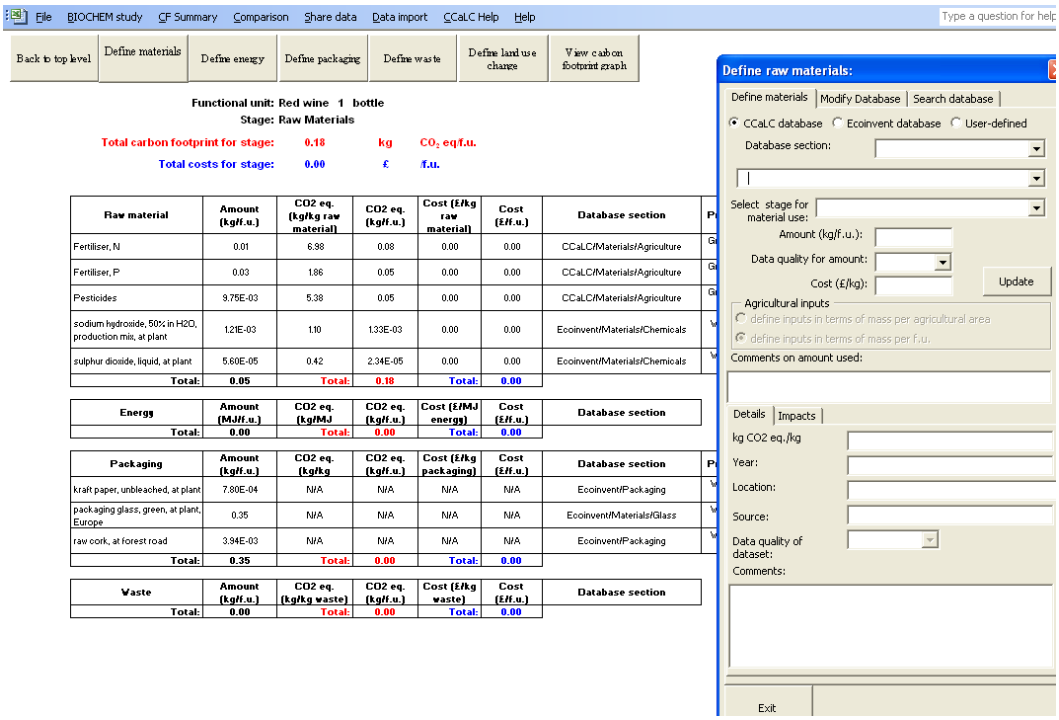


Figure 8 Raw materials stage with the *Define raw materials* user form

Other materials can be added in the same way. If a new material needs to be added to the database, then this can be done through the *Modify Database* tab. This is discussed in more detail in section 9.

The total carbon footprint for the Raw materials stage can be seen at the top of the screen in red. The costs incurred during the stage are shown in blue and if in the Water usage view, the water footprint will be shown in green.

The amount of material being used can be updated at any time or can be removed completely from the analysis by selecting that raw material in the *Define materials* user form and setting its amount to zero.

7.4 Defining transport

Transport links can be defined when there is a material to be transported between stages.

To define transport (

Figure 9):

1. Click on the relevant transport box either at the top level or in the Production stage; this takes the user to the transport stage screen
2. Click the *Define Transport* button
3. A user form appears asking the user to *select* materials to be transported
4. Select the required material from the list box
5. Click on *Define Transport*. The *Define Transport* user form will then be shown (see Figure 10)
6. Choose the desired database (CCaLC or Ecoinvent)
7. Select the type of transport from the drop-down menu (e.g. *40 t – truck*)
8. Enter the distance travelled into the text box (*note the units required*)
9. Enter the estimated packing density of the material into the text box (if not known – leave as the default value of 1). The packing density is only important for low density products (approx. 300 kg/m^3 or less)
10. If a truck has been selected, specify whether it returns back empty and if so, select the check box. Selecting empty return will increase the carbon footprint for a transport option by about 60%
11. Enter the cost of the transport per functional unit (if desired)
12. Select the data quality for the distance specified (*high, medium, low*) to indicate how confident you are in the figure used
13. Click the *Update* button.

The transport table will then be updated with information related to the journey that has just been specified. Information pertaining to transport type, distance, mass transported, carbon footprint for journey and total carbon footprint for the stage as well as any costs are all shown. The database section from where the carbon footprint data were sourced is also displayed.

A journey can be modified through the user form by selecting that journey again and changing the details. The journey can be removed in a similar way by setting the distance travelled to zero.

The methodology for calculating the carbon footprint of transport is given in

NB Note that the transport <u>within</u> the Production stage is not shown on the top level view. The top level only shows the transport of raw materials <u>into</u> the production stage and then <u>out</u> of the production stage. Therefore, the carbon footprint for the transport within the Production stage is not displayed; however, it

is shown in the relevant graphs and can also be viewed via the CF Summary menu option. Transport steps within the Production stage can also be only modified from the relevant production stage rather than from the top-level view.

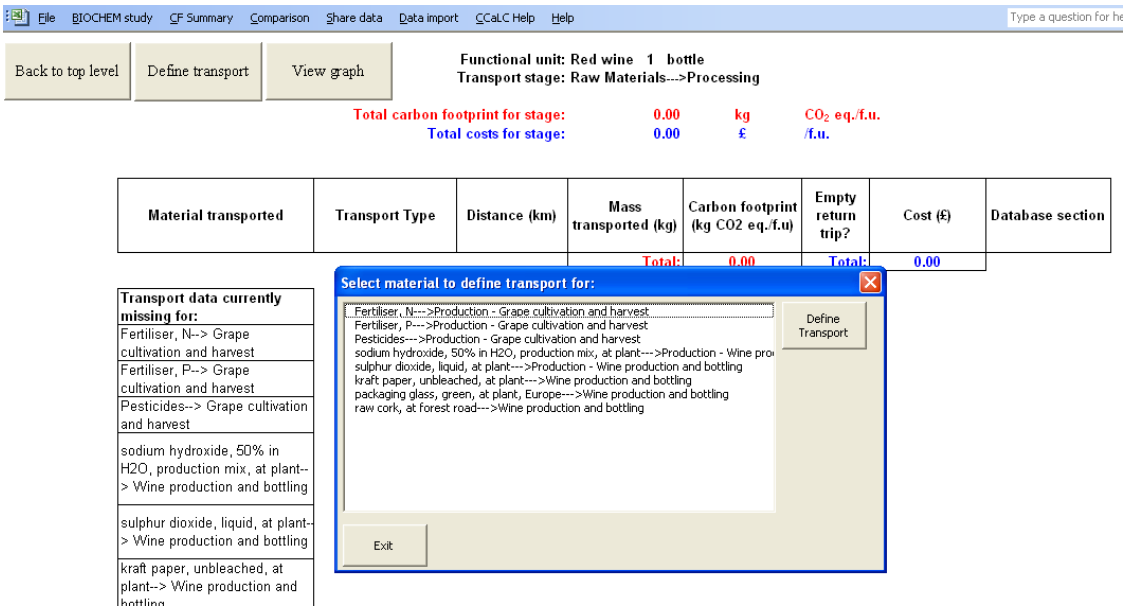


Figure 9 View of the Transport stage and a user form for defining transport

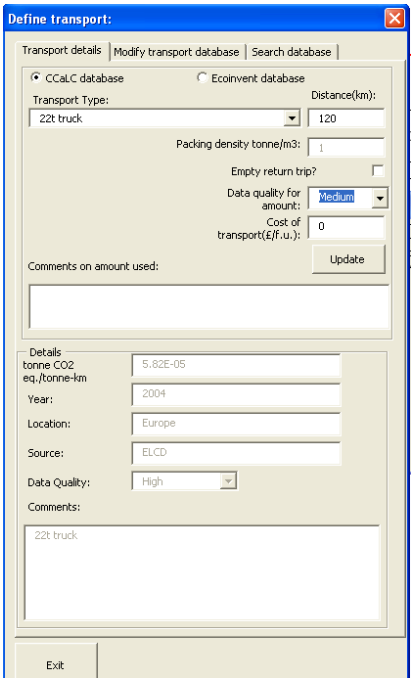


Figure 10 Define Transport user form

7.5 Defining the production stage

The details of the production stages can be defined by specifying each individual production stage in turn (see section 6 for how to navigate in this stage). Once the raw materials have been defined, they will be showing as inputs into the production stages where they are being used. This can be viewed by clicking on Production box from the top level of the tool and then clicking on the individual stage of interest. This takes the user to the tables which show the raw materials input to that stage (see Figure 7).

7.5.1 Defining energy use

Energy use for the production (as well as other life cycle stages) can be defined by clicking the *Define Energy* button. The associated user form is shown in Figure 11.

The energy is defined as follows:

1. Select the required database (CCaLC or Ecoinvent)
2. Select the required energy type from the drop-down menu
3. Enter the amount used in the text box (NB: make sure the correct units are being used)
4. Select the data quality for the amount being specified to indicate how confident you are in the figure used (*high, medium, low*)
5. Enter the cost per unit of energy being used (if needed)
6. Include any relevant comments in the comments box (this is optional but is recommended as a reminder for future uses)
7. Click on the *Update* button.

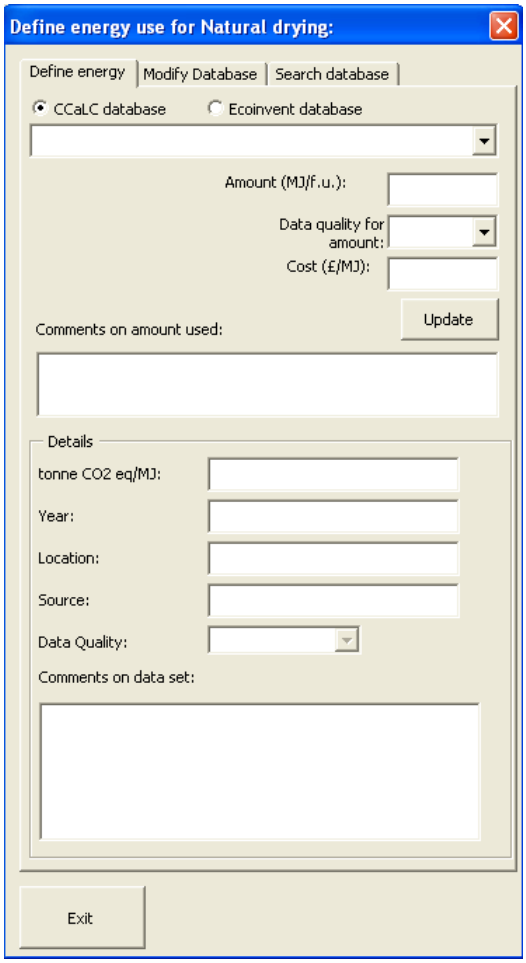


Figure 11 Define Energy user form

The energy table on the screen will be updated with the relevant information and the carbon footprint and associated cost shown. The database from where the data were selected is also displayed.

7.5.2 Defining land use change

If following the PAS2050 guidelines, land use change relevant to the functional unit that has occurred during the last 20 years must be accounted for in the analysis. Land use change can be defined in any of the production stages as well as in the raw materials stage. The procedure is as follows (see Figure 12):

1. Click the *Define land use change* button in any Production or Raw material stage
2. From the drop-down list, select the country where the land use change has taken place
3. From the drop-down list, select the current land use (*annual cropland, perennial cropland*)
4. From the drop-down list, select the previous land use (*forest land, grassland*)

5. Enter the area of land changed per functional unit (*hectares*)
6. Enter the time the land is used for per functional unit (*years or pro-rata months expressed in years*)
7. Select the data quality for steps 5 and 6 above (*high, medium, low*) to indicate how confident you are in the figures used
8. Click *Update.*

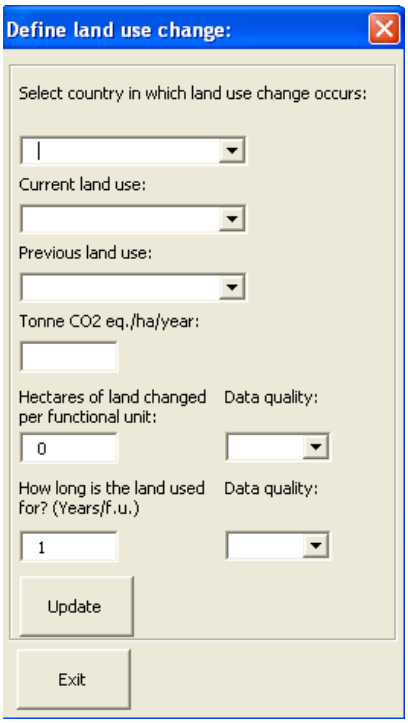


Figure 12 Land use change form

7.5.3 Defining direct emissions

Direct emissions arising from the production as well as storage and use stages can be defined using the *Define stage* button in any of the production stages or the *Define storage/Define use* buttons in the storage and use stages, respectively. The user can define either direct greenhouse gas emissions and/or emissions of other substances that are relevant to other impact categories. Figure 13 and Figure 14 show the appropriate user forms. Direct greenhouse gas emissions can be defined as follows:

1. Select the gas emitted from the list of greenhouse gases
2. Enter the amount
3. Click *Update.*

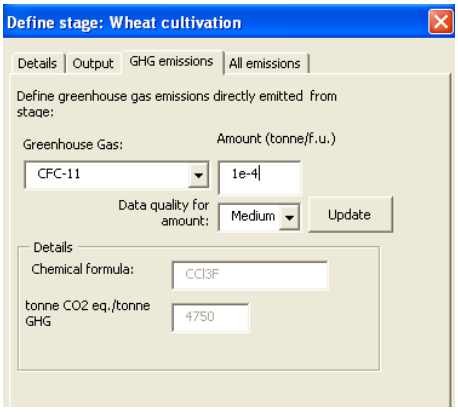


Figure 13 Defining direct GHG emissions

Other emissions can be defined as follows:

1. Select the medium in which the emissions occur (*air, fresh water, marine water, industrial soil, agricultural soil*)
2. Select the substance emitted
3. Enter the amount emitted
4. Select the data quality (*high, medium, low)* to indicate how confident you are in the amount specified
5. Click *Update.*

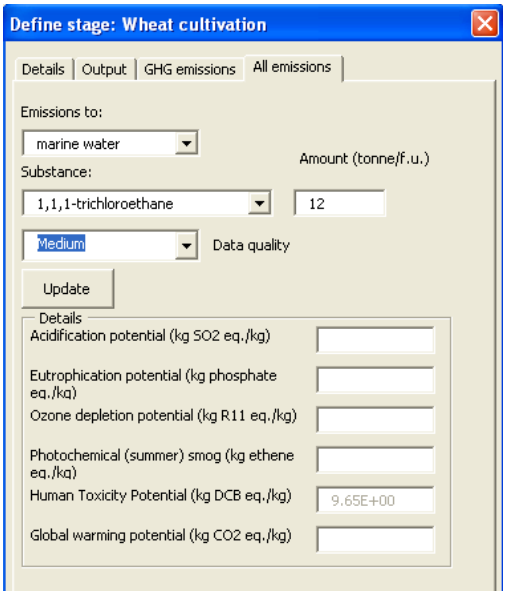


Figure 14 Defining other direct emissions

7.5.4 Defining packaging use

Packaging use for the production stage as well as any other stage can be defined by clicking the *Define Packaging* button. The associated user form is shown in Figure 15. Three databases exist for packaging: CCaLC food/drink, CCaLC other and Ecoinvent.

Packaging can be defined as follows (Figure 15):

1. Select the required database (CCaLC food/drink; CCaLC other; Ecoinvent)
2. Select the required packaging type from the drop-down menu
3. Enter the amount used in the text box
4. Select the data quality of the amount being specified (*high, medium, low*) to indicate how confident you are in the figure used
5. Enter the cost per unit of packaging (if needed)
6. Include any relevant comments in the comments box (as a reminder for any future uses)
7. Click on the *Update* button.

The packaging table for the stage is then populated. Packaging types can be modified or removed from the analysis by selecting the packaging type and changing the details or setting the mass to zero, respectively.

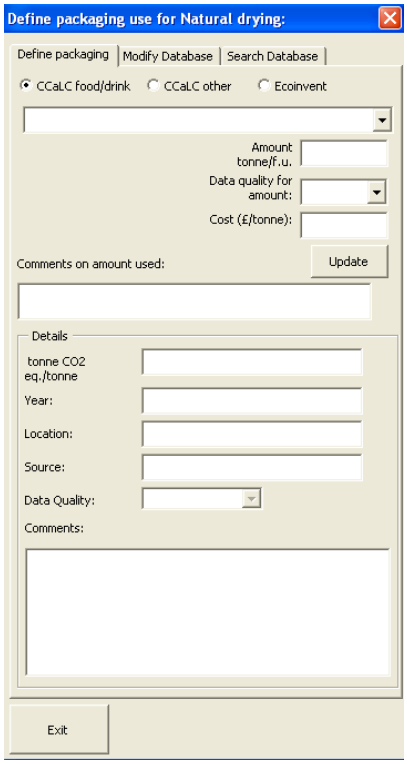


Figure 15 Define Packaging user form

7.5.5 Defining waste

Waste use for the production as well as the other stages can be defined using the same procedure as for defining materials, energy or packaging. The user form is similar to those used for other life cycle stages and is shown in Figure 16.

The procedure for defining waste is as follows:

1. Select the required database (CCaLC or Ecoinvent)
2. Select the required waste type from the drop-down menu
3. Enter the amount of waste in the text box
4. Select the data quality of the amount being used (*high, medium, low*) to indicate how confident you are in the figure used
5. Enter the cost of the waste per unit mass (if needed)
6. Include any relevant comments in the comments box (as a reminder for future uses)
7. Click on the *Update* button.

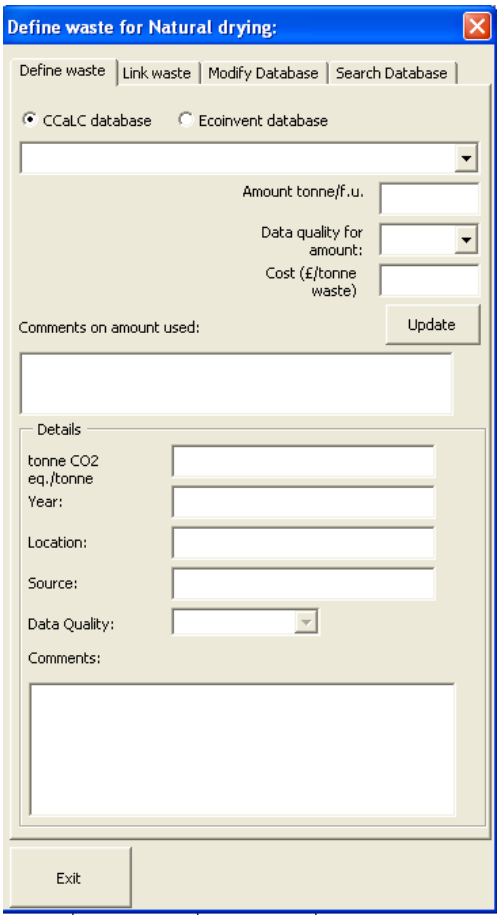


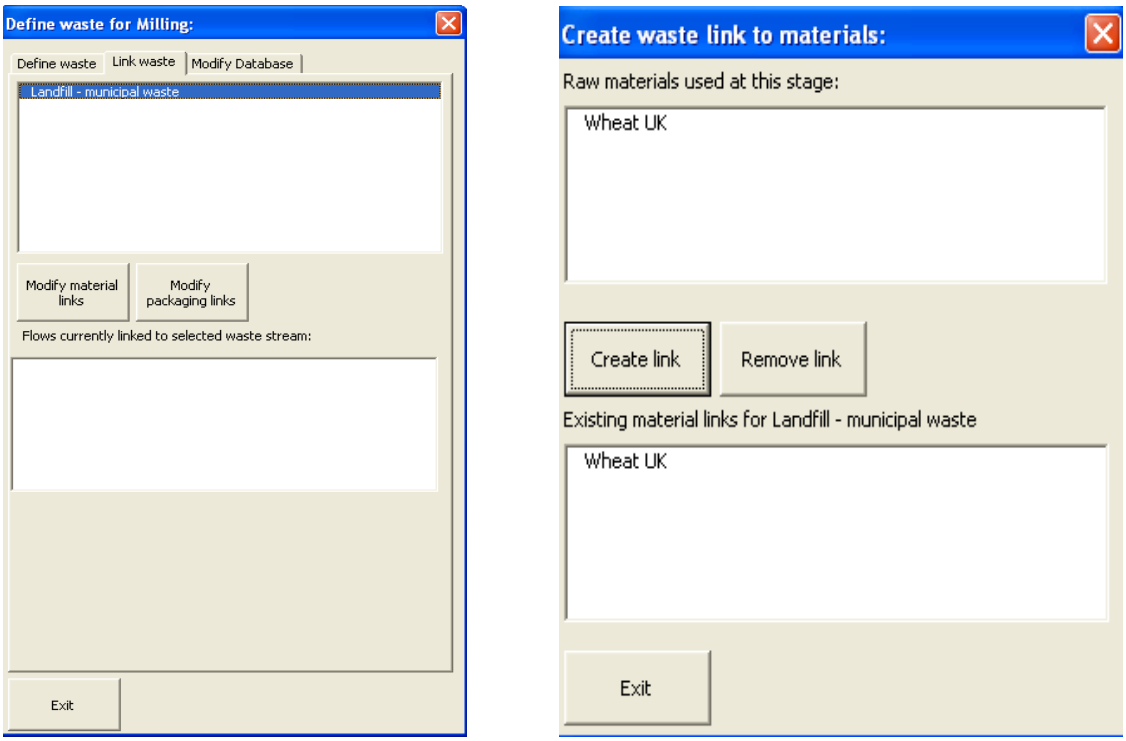
Figure 16 Define waste user form

7.5.6 Linking waste to raw materials

Waste can be linked to raw materials to allow the user to update automatically the amount of raw materials used when the amount of waste at a particular stage is changed (e.g. due to efficiency improvements). This feature is useful if a large number of raw materials are being used as it saves having to go back and update them manually if the waste amount changes.

To use this feature:

- click on the *Link waste* tab on the Waste user form (see Figure 17a). Two text boxes are shown on the form. The top box shows the list of waste streams used at this stage of the analysis that can be linked to materials used at that stage. The bottom box shows the list of materials that are currently linked.
- click on the *Modify material links* button to link a raw material to waste. This brings up a separate user-form that allows the user to create and remove links using the appropriate buttons (Figure 17b). The top box in this user form shows raw materials used at this stage and the bottom box shows the existing material links for the waste stream selected. In this case *Wheat – UK* is the only material available to link.



a) Link waste tab b) Create/delete links form

Figure 17 Link waste forms

The user will not initially see any effects of material linking. However, if the amount of waste being used is changed, then the raw materials linked to it will be updated to reflect

that change. For instance, if the amount of waste at this stage was 0.1 kg when the material was linked, and it was increased to 0.2 kg, the amount of raw material, in this case *Wheat UK,* would be increased by 0.1 kg.

If multiple materials are linked to a waste stream, then the amounts are adjusted in proportion to the ratio of their use. For instance:

If three materials are linked to one waste stream:

Landfill Municipal = 1 kg

Material 1 = 4 kg
Material 2 = 4 kg
Material 3 = 2 kg

Then, increasing the amount of waste would have the following effect:

Landfill Municipal = 2 kg

Material 1 = 4 kg + 0.4 kg = 4.4 kg
Material 2 = 4 kg + 0.4 kg = 4.4 kg
Material 3 = 2 kg + 0.2 kg = 2.2 kg

7.5.7 Defining production stage outputs

Outputs from the production stages as well as storage can be defined in terms of mass or energy flows.

To define outputs from a stage:

1. Click on the *Define stage* button to bring up the user form (Figure 18)
2. Select the O*utput* tab
3. Decide whether to define a product or a co-product (note that a product must be defined; defining co-products is optional, depending on the system being studied)
4. Type the name of the output flow into the drop down box provided (the material can be selected later on as well as its mass changed). **NB: Each output flow or co-product must have a different name even if they go through stages unchanged – this is to allow the system to distinguish between the flows in different stages**
5. If appropriate, select the destination stage for product mass flow. **NB: The product can be treated as either an intermediate product and sent on to another production stage (or storage or use) or a final product if sent to the use stage. Co-products do not have a destination as they are assumed to leave the system at that point, but they may be used for the purposes of allocation (see section 7.7.4*)*. Energy outputs do not have a destination either and co-products defined as energy outputs may be used for the purposes of economic or energy allocation (see section 7.7.4).**
6. Add the amount of output to the text box
7. Add the value of the output (in desired)

8. If you wish to perform energy allocation at a later point, define the Lower Heating Value of any mass outputs; similarly, if you wish to perform economic allocation, the costs/values of all products and co-products must be defined
9. Click the *Update* button.

Once a mass output has been created, it will show up in the relevant transport stage as well as in the material inputs table of the appropriate stage (production, storage or use).

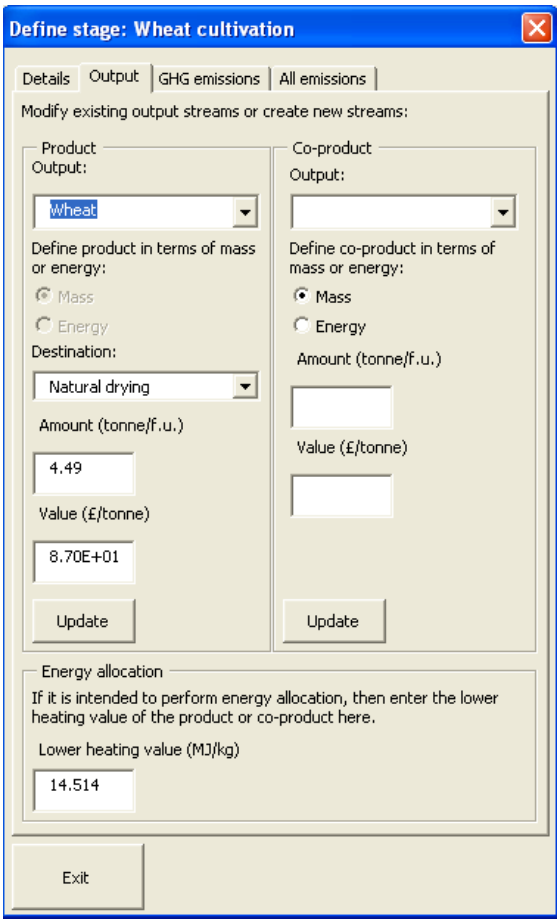


Figure 18 Output tab on the Define stage user form

Note that it may be necessary to create a mass output from a stage for two reasons:

1. Transport can only be defined if there is a material flow between stages
2. Each stage is mass-balanced. Material outputs show up as a mass input at its destination stage. However, mass-balances are shown for information only and will not stop the tool from working.

7.6 Defining the storage stage

The storage stage is defined in a similar way to the productions stage – see section Defining the production stage

7.7 Defining the use stage

Several feature of the use stage make it a unique stage within the analysis. These are described below.

7.7.1 Defining appliance use

Often during the use phase of a product, it is necessary to use an appliance (e.g. for food preparation or laundry washing). To aid these analyses, the CCaLC BIOCHEM tool contains databases for refrigeration, washing machines and ovens.

Appliance use can be defined as follows (Figure 19):

1. Click the *Define use* button
2. Select the appropriate database (F*ridges/Freezers, Washing machines/Dryers, Electric Ovens/Others*)
3. Select the appropriate appliance
4. Enter the appropriate data regarding *storage time, volume, cooking time* etc.
5. Enter the carbon footprint per unit energy (*The default value is for the UK grid. Other values can be found in the energy database if needed*).
6. Select the data quality (*high, medium, low*) to indicate the level of confidence in the amount specified
7. Click Update.

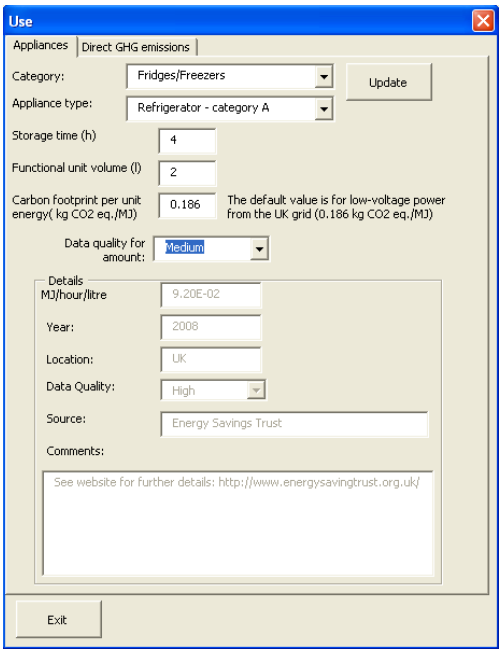


Figure 19 Appliances user form

7.7.2 Defining biogenic carbon storage/uptake in products

The impact on the carbon footprint of biogenic carbon storage or carbon uptake in products can be accounted for in CCaLC BIOCHEM. The impact of this reflects the weighted average time of storage during a 100-year assessment period. Two carbon storage cases may be defined:

- a specific case of biogenic carbon storage following product formation; and
- a general case of biogenic carbon storage or carbon uptake.

For a specific case where the carbon storage benefit of a product exists between 2 and 25 years after product formation (and no carbon storage benefit exists after that time), the weighting factor applied is as follows:

$$\text{Weighting factor} = (0.76 \times t_0)/100$$

where t_0 is the number of years the full carbon storage benefit of the product exists following its formation.

For a general case, the weighting factor to be applied to the CO_2 storage benefit over the 100-year assessment period is calculated as follows:

$$\text{Weighting factor} = \sum_{i=1}^{i=100} x_i \div 100$$

where *i* is each year in which storage occurs and *x* is the proportion of total storage remaining in any year *i*.

For further descriptions of these calculation methods, see PAS2050, Annex C.

Carbon storage can be defined in CCaLC BIOCHEM as follows (Figure 20):

1. Choose either a specific or a general case
2. If a specific case, select a storage time from the drop down list
3. If a general case, calculate a weighting factor using the methodology in the PAS2050
4. Enter the amount of carbon stored
5. Select the data quality (*high, medium, low*) to indicate the confidence level in the amount specified
6. Click *Update.*

The amount of carbon stored will be shown on the use stage worksheet and the total deducted from the carbon footprint at that stage.

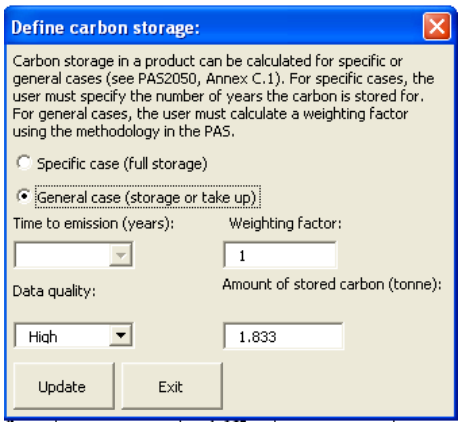


Figure 20 Carbon storage

7.7.3 Defining carbon release from product disposal

In cases where the disposal of a product is not immediate, it may be appropriate to apply a weighting factor to the carbon footprint of the waste stream in order to account for carbon stored up to that point. Two end-of-life scenarios can be defined:

- a specific case for a delayed single release and
- a general case for a delayed release.

For a specific case where the disposal of a product occurs between 2 and 25 years after product formation, the weighting factor applied is as follows:

$$\text{Weighting factor} = (100 - (0.76 \times t_0))/100$$

where t_0 is the number of years between product formation and the single release of emissions.

For a general case where releases may not occur singularly, the methodology used is as follows:

$$\text{Weighting factor} = \sum_{i=1}^{i=100} x_i \, (100\text{-}i) \div 100$$

where *i* is each year in which emissions occur and *x* is the proportion of total emissions occurring in any one year *i.* The methodology for this calculation is given in PAS2050 Annex B.

The product's end of life can be defined as follows (Figure 21):

1. Choose whether a specific or general case is being modelled
2. If a specific case, select the time to disposal from the drop down list
3. If a general case, calculate a weighting factor as described in PAS2050 and enter it in the text box

4. Select the appropriate disposal waste stream from the drop down list
5. Enter the product mass
6. Enter the cost of disposal per unit mass (if needed)
7. Select the data quality (*high, medium, low*) to indicate the confidence level for the amount specified
8. Click *Update*.

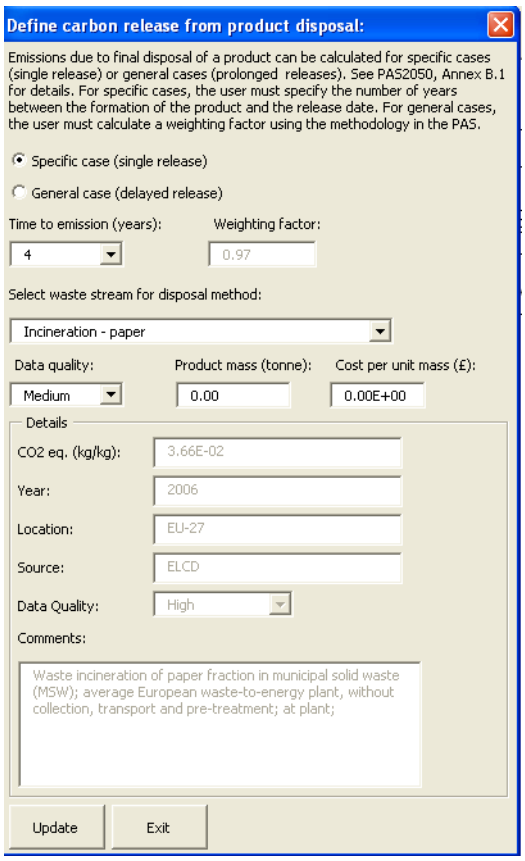


Figure 21 End of product's life user form

7.7.4 Co-product systems: System expansion and allocation

In co-product systems it is often necessary to calculate the carbon footprint of each co-product. Within CCaLC, this can be carried out in two ways:

- by system expansion and
- by allocation (mass, energy and economic basis).

NB: The results of either system expansion or allocation are shown at the top level and not at individual stages.

To perform system expansion or allocation, click the *System expansion/allocation* button at a Production stage where co-products are produced. It is then possible to choose

between system expansion and allocation by clicking on the appropriate buttons at the top of the tool. Note that, to be able to perform either operation, the co-products must first be defined (by clicking on *Define stage* and specifying co-product details; see section 7.5.7).

- System expansion

System expansion is performed by selecting a product/service that the co-product can substitute. The CCaLC BIOCHEM tool then subtracts the carbon footprint of this substitute product/service from the carbon footprint of the whole system.

System expansion is carried out in CCaLC BIOCHEM as follows:

1. Click on the *Perform system expansion* button
2. Select a co-product from the dialogue box that pops up; this bring up the *System Expansion* user form shown in Figure 22
3. Select a material or energy from one of the available databases
4. Enter the amount of product
5. Select the data quality (*high, medium, low*) to indicate the confidence level for the amount specified
6. Click *Update.*

The data tables are then updated and the amount to be subtracted from the carbon footprint of the whole system is shown.

- Allocation

Allocation can be carried out using mass, energy or economic basis. Allocation can be carried out in CCaLC BIOCHEM as follows:

1. Click on the *Perform allocation* button; this brings up the user form shown in Figure 23
2. Select either *Mass, Energy or Economic* radio button (NB: PAS2050 requires economic allocation)
3. Click Update (NB: allocation can be deleted by setting the value in the Allocation text box to zero)

The allocation tables are then updated to show the allocation results. Note that to perform economic or energy allocation, all cost and energy data should be specified for all the products and co-products.

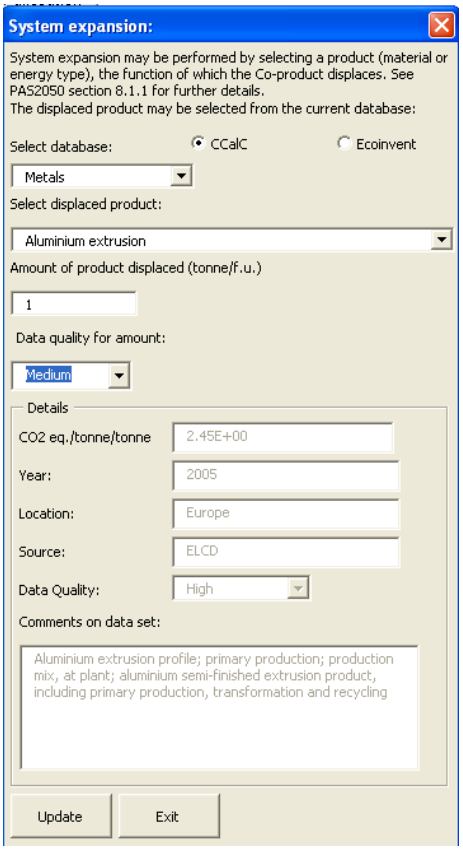


Figure 22 System expansion user form

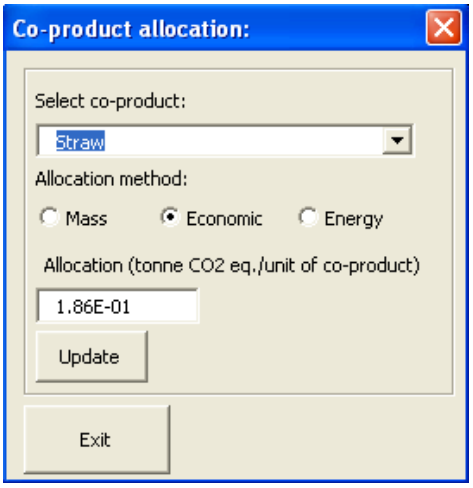


Figure 23 Allocation user form

8 Viewing carbon footprint data and results

8.1 Numerical display

Numerical carbon footprint results are displayed in red font throughout the tool. The units are expressed as *mass* per functional unit (f.u.) where *mass* is the unit specified by the user (e.g. kg, tonne, g).

Note the following:

- The total carbon footprint for the whole system is shown at the bottom of the screen on the top level of the tool
- The carbon footprint for the Raw materials, Production, Storage and Use stages is shown above the relevant box on the top level of the tool
- The breakdown of the carbon footprint for each stage can be seen in the tables by clicking on the relevant stage
- The carbon footprint of a particular material, energy, packaging, waste or transport type can be viewed in the relevant user form by clicking on Define material, energy etc.

8.2 *Graphical display*

Graphs showing carbon footprint results can be viewed by clicking the button *View graph of carbon footprint* at the top level of the tool. An example is shown in Figure 24.

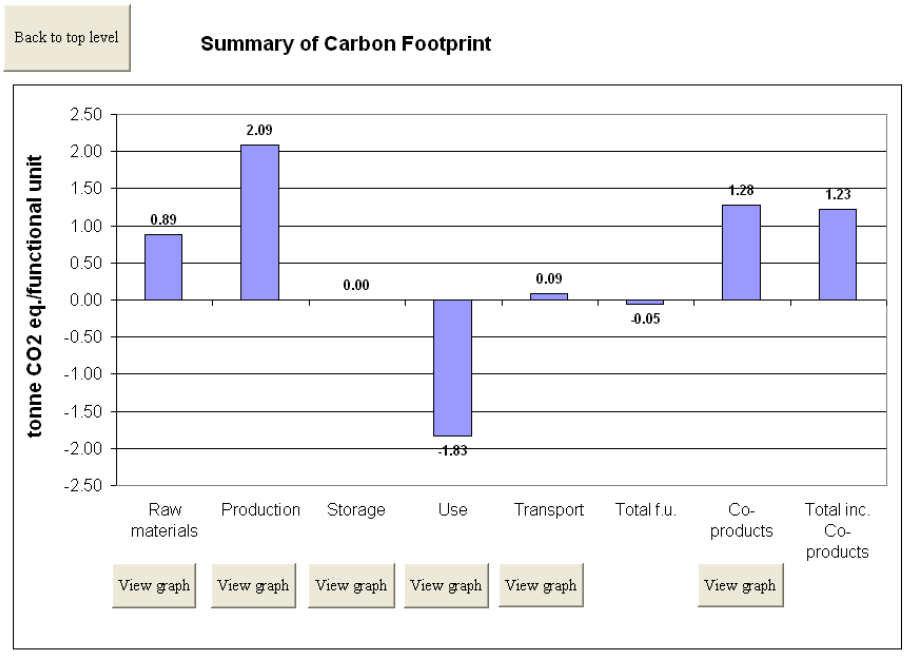


Figure 24 Graphical view of carbon footprint results at the top level of the tool

In addition, carbon footprint graphs can be viewed at each life cycle stage by clicking on the *View carbon footprint graph* button. This brings up a graph which allows drilling down

to see the breakdown of each material, production stage, etc. (see the example for the Production stage in Figure 25).

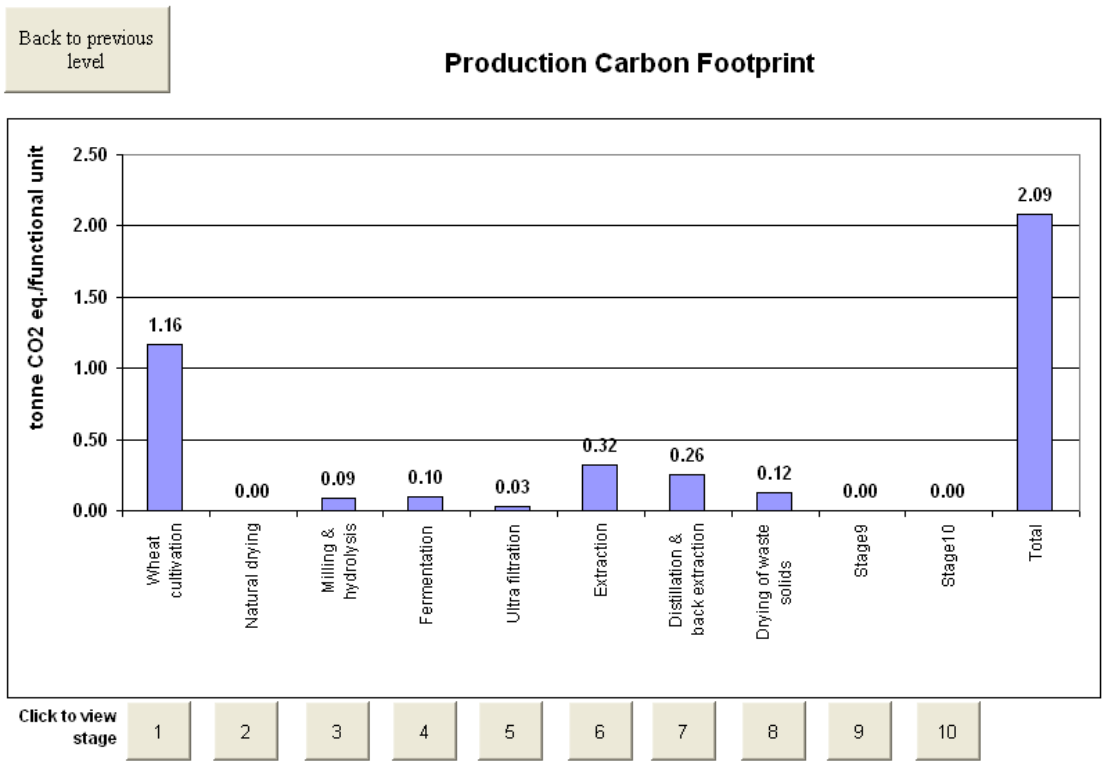


Figure 25 Carbon footprint for production stages

9 Modifying user carbon footprint databases

User-defined data can be added, modified and deleted, as explained below. The databases that come with the tool cannot be deleted or changed in any way.

9.1 Creating a new user database item

User data can be added in the CCaLC BIOCHEM tool. This can be done for any of the following: materials, energy, packaging, waste and transport.

New data item can be created by:

- Selecting the M*odify Database* tab on the appropriate user form (see Figure 26 for a Raw materials example – to get there, click on the *Raw Materials* box from the top level view, then on the *Define Materials* button at the top of the screen and then on the *Modify Database* tab; the same applies for all other databases, i.e. energy, waste, packaging and transport)
- Clicking the *Create new item* button
- Filling in the appropriate fields in the resulting user form (see Figure 27).

Once created, the item will be shown in the relevant database.

NB:

- **It is not possible to create a data item with a name that already exists in the database. Similarly, once created, the name of the user data item cannot be changed. If a name change is required, the user is advised to delete the item and then recreate it.**
- **In the Materials database, the user-defined data can be found under the *User defined* section in the CCaLC database (see Figure 28); for all other databases, the user-defined data are shown together with the other CCaLC data.**

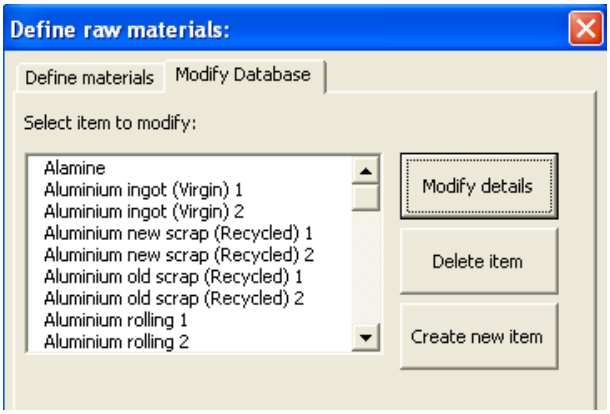


Figure 26 Modify database tab (for the Raw materials stage)

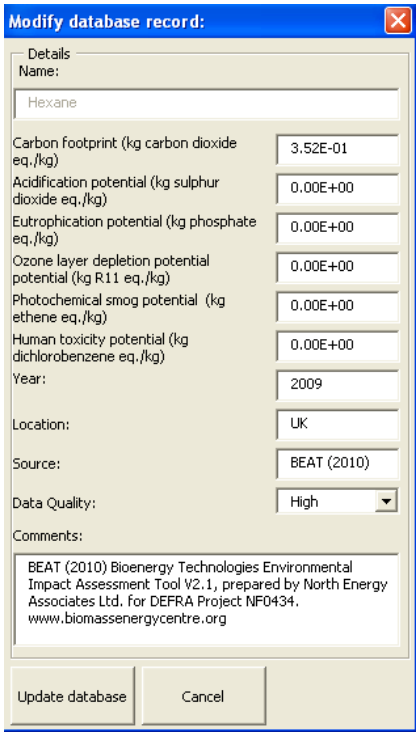


Figure 27 Create new item form

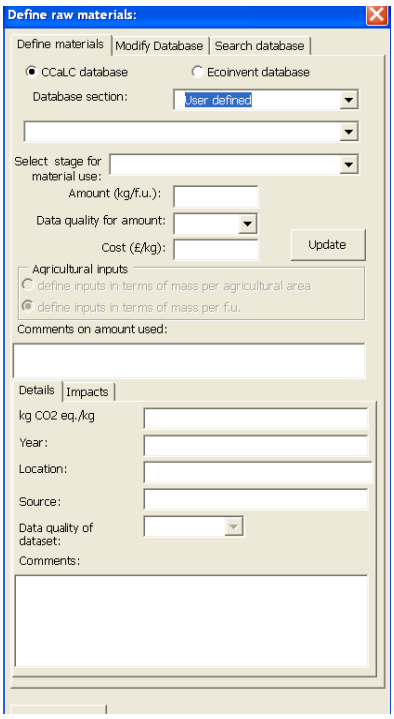


Figure 28 Materials database: user-defined data items are placed in the *User defined* section in the CCaLC database

9.2 Modifying an existing user database item

To modify a user-created data item:

- Click on the button *Define ...* (e.g. *Modify Materials*)
- Click on the *Modify Database* button; this will show a list of the existing user-created items
- Select the item to be modified and then click on the *Modify Details* button; this brings up the form with the details for that item (see Figure 29)
- Change the details as desired and then press the *Update database* button.

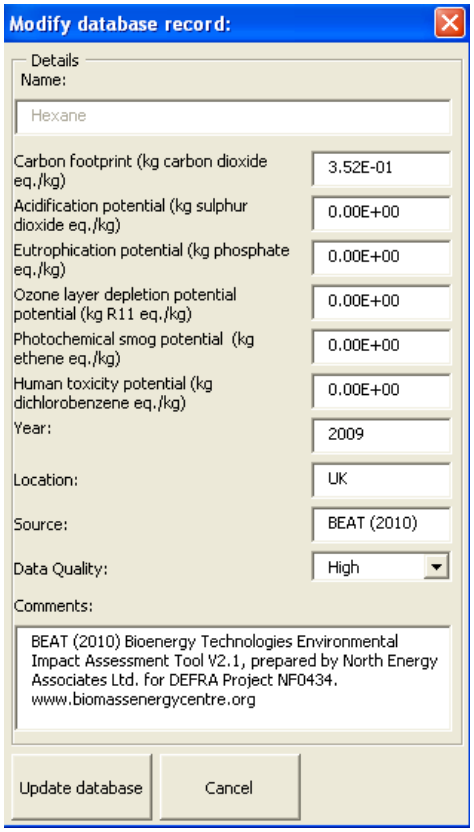


Figure 29 Modify details for an existing user data item

9.3 Deleting a user database item

To delete a user-created data item:

- Click on the button *Define ...* (e.g. *Modify Materials*)
- Click on the *Delete Database* button
- Select the item to be modified; this brings up a warning on whether the user wants to delete the item
- Click Yes to update the database.

NB: Database items that are in use in the study active at the time of the attempted deletion cannot be deleted. The databases that come with the tool cannot be deleted either.

10 Carbon footprint data quality assessment

Throughout the tool, the user is required to specify the data quality for the information they are inputting. Data quality is expressed as either high, medium or low quality. Data quality is specified at two instances: for the whole data set and for the amount being specified by the user.

The data quality for a data set is specified when the data set is created and is not subject to alteration during the analysis. Data quality of the data sets supplied within the tool will largely be high, as they are from trusted sources. For user defined data sets, the user can specify the data quality when they create it.

The data quality for the amount of material, energy, travel distance etc. specified by the user has to be specified each time the user adds a new datum to the analysis. The user is required to make a judgment as to how reliable they believe their data are. For instance, if a transport distance is known then the user might choose *high* quality of data; however, if the distance is only guessed at or generic, then the data quality for this datum will be low.

The overall data quality assessment is made by weighting each data point by its contribution to the total carbon footprint. A full description of the data quality model is given in Appendix 3.

To examine the data quality for the analysis, click on the *View data quality assessment* button the top level of the tool. This brings up the data quality assessment sheet (Figure 30) which shows the overall data quality for the analysis as well as the data quality for each individual stage.

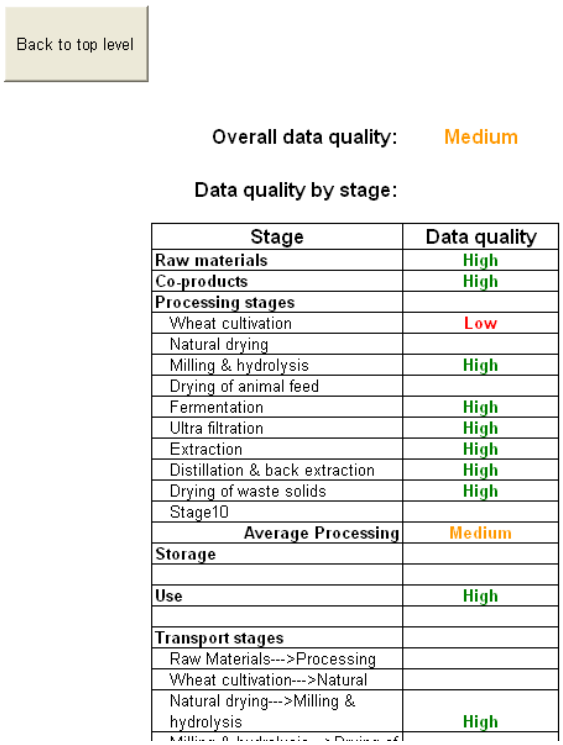


Figure 30 (Partial) View of data quality assessment screen

11 Loading, saving, deleting or starting a new carbon footprint study

An existing carbon footprinting study can be loaded, saved or deleted by using the *BIOCHEM study* menu option from the CCaLC menu at the top of the screen (see Figure 31). A new study can also be started by using the same menu option.

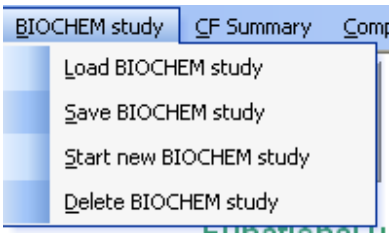


Figure 31 CF study menu options

11.1 Loading an analysis

An existing analysis can be loaded by selecting *Load BIOCHEM Study* from the *BIOCHEM Study* menu option. The user can then select from a range of either CCaLC or user-defined studies (see Figure 32). Note that user-defined studies can be found under the User-defined section.

NB: Loading a BIOCHEM study will overwrite any data currently being used. Therefore, users are advised to save their analysis before loading another one.

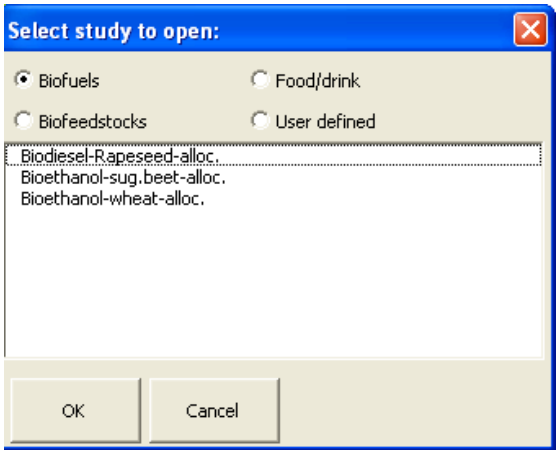


Figure 32 Load CF study user form

11.2 Saving an analysis

To save a study, select *Save BIOCHEM Study* from the *BIOCHEM Study* menu option and type a (unique) name into the drop down box. Alternatively, select a previously saved study to overwrite it with new results.

Note: Saving a study saves the specific analysis but it does not save the CCaLC BIOCHEM tool. To do the latter, use the Excel File/Save menu. It is recommended that the user saves the CCaLC BIOCHEM tool on a regular basis under a different name/names to avoid losing data.

11.3 Starting a new study

A new study can be started by selecting the *Start new BIOCHEM study* item from the *BIOCHEM Study* menu. The user will be asked if they are sure they want to start a new study and will then be given the option of saving the existing study first.

11.4 Deleting an analysis

To delete an existing analysis, select the *Delete BIOCHEM study* optin from the *BIOCHEM Study* menu. This brings up the list of the user-defined studies that can deleted. Select the appropriate study and click the *Delete* button to delet the study. If no studies are listed, that means that there are no user-defined studies and therefore the deletion is not possible.

12 Carbon footprint summary

A summary of the results of a carbon footprint study can be obtained via the *CF Summary/View CF Summary* menu option. This takes the user to a page with tables and graphs that summarise the analysis (Figure 33). The summary can be printed out by selecting *Print summary* from the CF Summary menu option.

An inventory of the materials, energy and packaging used in the analysis can be viewed by selecting the CF *Summary/View Inventory menu.* A partial view of the tables is shown in Figure 34.

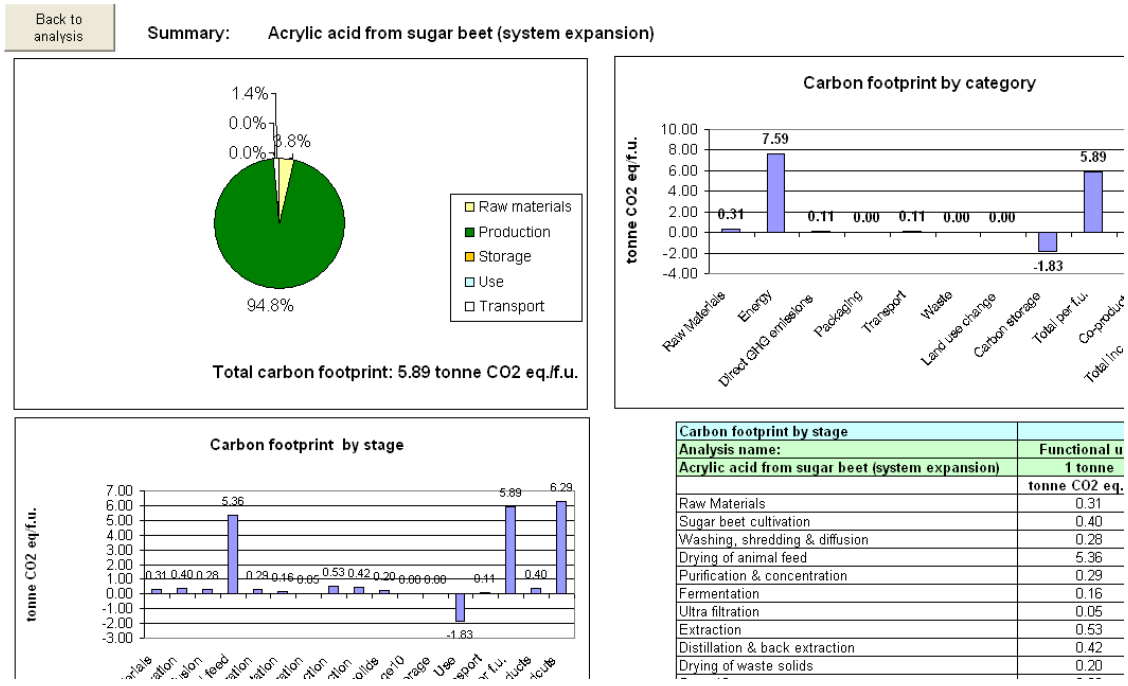


Figure 33 Partial view of the summary screen

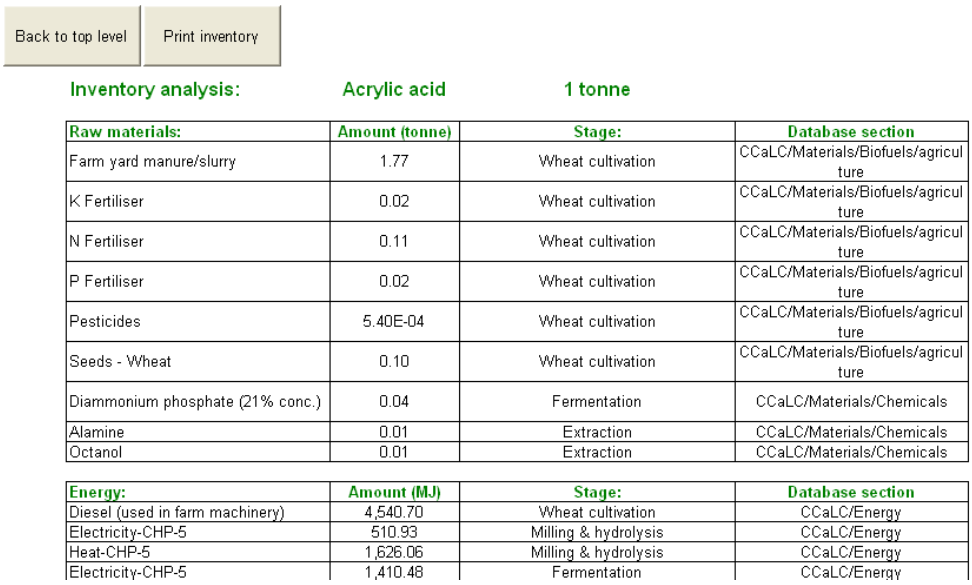


Figure 34 Partial view of the inventory screen

13 Data comparison

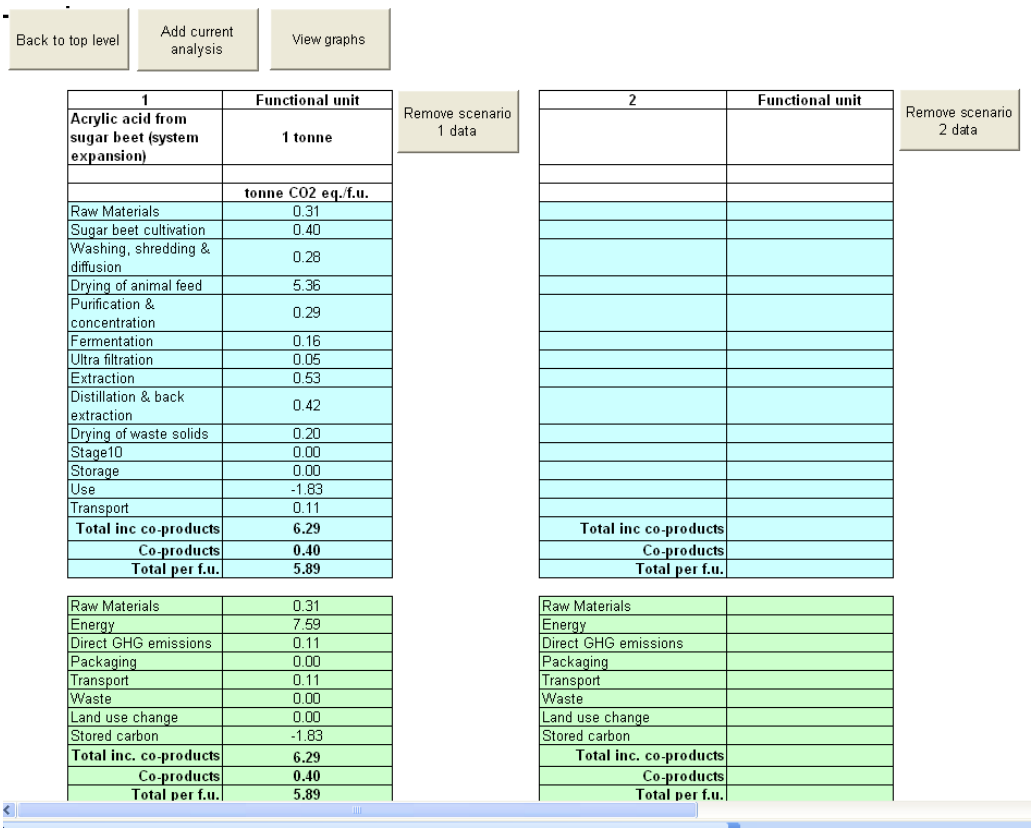
Up to four analyses can be compared for either carbon footprint, water footprint, other environmental impacts or value added. This can be carried out via the *Comparison*

menu and choosing the appropriate option (carbon footprint, water footprint, all impacts or value added).

To compare the alternative/different systems:

- Click the *Comparison/Appropriate option* from the CCaLC BIOCHEM menu option; this takes the user to the appropriate tables (see Figure 35 showing an example for the carbon footprint)
- If any data are shown in the tables that are not part of the desidered comparison analysis, click the *Clear data* button; this will delete any previous data that the user does not wish to consier
- Click the *Add current analysis* button, to add the data from the current analysis; if there were no other data in the tables, the data will be added to the first table; otherwise, the data will be added to the next empty table
- If all four tables are populated by data, the user will be given a choice as to where they would like new comparison added.

A graphical comparison of the data in the tables can be viewed by clicking on the *View graphs* button at the top of the sheet.



1	Functional unit
Acrylic acid from sugar beet (system expansion)	1 tonne
	tonne CO2 eq./f.u.
Raw Materials	0.31
Sugar beet cultivation	0.40
Washing, shredding & diffusion	0.28
Drying of animal feed	5.36
Purification & concentration	0.29
Fermentation	0.16
Ultra filtration	0.05
Extraction	0.53
Distillation & back extraction	0.42
Drying of waste solids	0.20
Stage10	0.00
Storage	0.00
Use	-1.83
Transport	0.11
Total inc co-products	**6.29**
Co-products	**0.40**
Total per f.u.	**5.89**

2	Functional unit
Total inc co-products	
Co-products	
Total per f.u.	

Raw Materials	0.31
Energy	7.59
Direct GHG emissions	0.11
Packaging	0.00
Transport	0.11
Waste	0.00
Land use change	0.00
Stored carbon	-1.83
Total inc. co-products	**6.29**
Co-products	**0.40**
Total per f.u.	**5.89**

Raw Materials	
Energy	
Direct GHG emissions	
Packaging	
Transport	
Waste	
Land use change	
Stored carbon	
Total inc. co-products	
Co-products	
Total per f.u.	

Figure 35 (Partial) View of the carbon footprint comparison sheet

14 Sharing user-created studies and results between users

14.1 Importing and exporting studies

User-created studies can be shared between users via the CCaLC menu option *Share data*.

To export studies, choose the *Export study* option. This brings up a form shown (Figure 36) that allows the user to select an analysis that has already been saved and then export it. This action will create a new excel file entitled CCaLC_xxxx.*xls* which the user can then re-name as required and then save. This file contains all of the analyses exported, along with any additions made to the database.

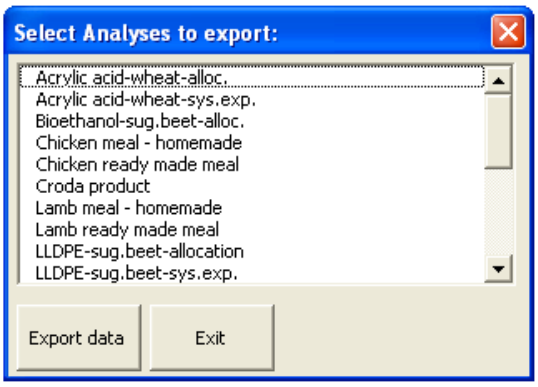


Figure 36 Study export form

To import a previously created analysis, the user should select the *Share data/Import* menu item. This then prompts the user to locate the previously created *CCaLC_xxxx.xls* (or user renamed) file in the desired directory. Once this is done, the user will be offered a choice of saved analyses to import (Figure 37). Multiple analyses can be selected at the same time.

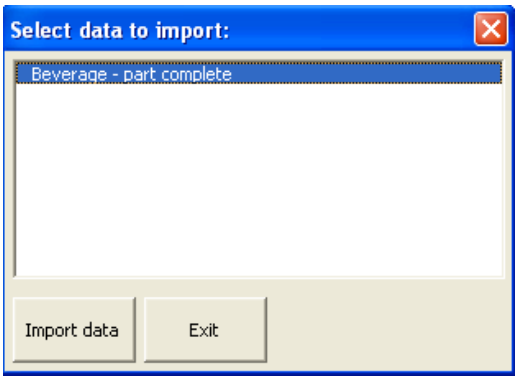


Figure 37 Data import form

Selecting one or more analyses from the list and clicking *Import data* will import the selected analyses to the tool and update the database accordingly. Imported analyses can then be examined using the *Load BIOCHEM Study* menu item (section 11.1).

Note: In order for any of the import/export functions to work, the CCaLC BIOCHEM tool must be the first and only excel workbook open. If this is not the case, the user will be prompted to close any other open excel files.

14.2 Exporting comparisons

Data from any comparisons made using the *Compare* menus can be exported using the *Share data/Export comparisons* menu. This creates a new workbook *Comparison export.xls.* This workbook contains all the comparison data as well as the appropriate graphs and can be modified by the user as any other Excel file.

14.3 Exporting graphs

Graphs from the analysis can be exported using the *Share data/Export graphs* menu. This creates a new workbook *Graph_export.xls* (which can be renaimed) which contains all the graphs from the analysis. This function enables the user to change the graphs and the related data as they wish.

15 Importing data sets

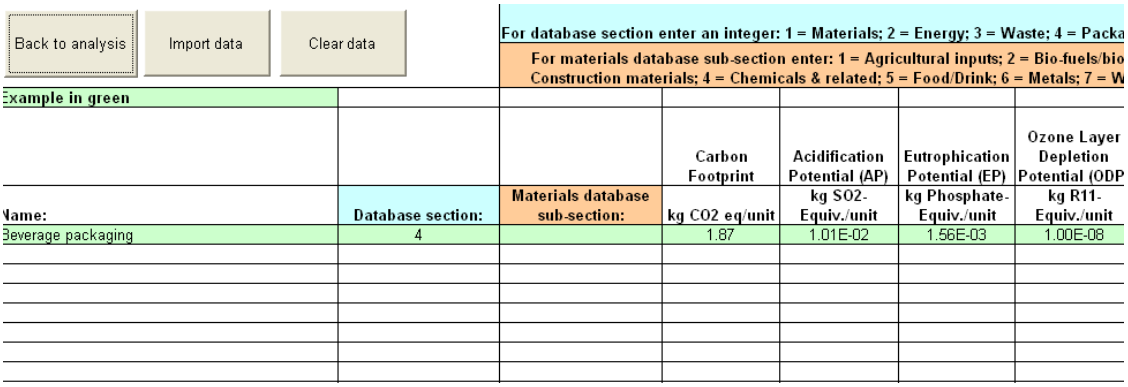
15.1 Importing data using the CCaLC template

The CCaLC data template can be used to import large amounts of data into the tool. It is more efficient than entering data individually through the user-forms.

To import data via the CCaLC import template, click on the *Data Import/CCaLC Template* menu option at the top of the screen. This brings up the CCaLC template shown in Figure 38. The user has to enter into the template the relevant data for the data sets in question, including which section of the database it is destined for (e.g. material, energy etc.). Instructions for filling out the form correctly are shown at the top of the screen. Note that an entry must be completed (i.e. the cursor must be outside a cell) for the function buttons to work.

Once the fields have been filled out correctly, the user should click the *Import data* button at the top of the screen. If any of the requisite fields are not filled out correctly, the user will receive a warning and the data will not be imported.

Once imported, the data are then available for use in the tool. Data can be cleared from the table by clicking on the *Clear data* button.



Back to analysis	Import data	Clear data	For database section enter an integer: 1 = Materials; 2 = Energy; 3 = Waste; 4 = Packa For materials database sub-section enter: 1 = Agricultural inputs; 2 = Bio-fuels/bio Construction materials; 4 = Chemicals & related; 5 = Food/Drink; 6 = Metals; 7 = W				
Example in green						
			Carbon Footprint	Acidification Potential (AP)	Eutrophication Potential (EP)	Ozone Layer Depletion Potential (ODP
Name:	Database section:	Materials database sub-section:	kg CO2 eq/unit	kg SO2-Equiv./unit	kg Phosphate-Equiv./unit	kg R11-Equiv./unit
Beverage packaging	4		1.87	1.01E-02	1.56E-03	1.00E-08

Figure 38 (Partial) View of the CCaLC data template screen

15.2 Importing ILCD data

CCaLC contains all available data sets available within the International Life Cycle Database (ILCD) at the time of release of this version of the tool (April 2011).

Further ILCD data, when available, can be imported by using the *Data Import/ILCD* menu option. This takes the user to the ILCD template import page where data from the ILCD data-set should be copy-pasted. ILCD data sets can currently be viewed at: http://lca.jrc.ec.europa.eu/lcainfohub/datasetCategories.vm This assumes that the format of the ILCD data will not change from the format available at the time of the launch of V2 of the CCaLC BIOCHEM tool.

To import the ILCD data:

- open the HTML file to be imported and select the entire list of output flows – see Figure 39
- select the cell A10 on the ILCD template sheet and paste the data into it
- click on the *Remove hyperlinks* button to remove any links to the HTML file; once this has been done the template should look like that shown in Figure 40
- click on *Import data* button to import data; this takes a few minutes
- to import further data sets in the same manner, clear the template by clicking the *Clear All* button.

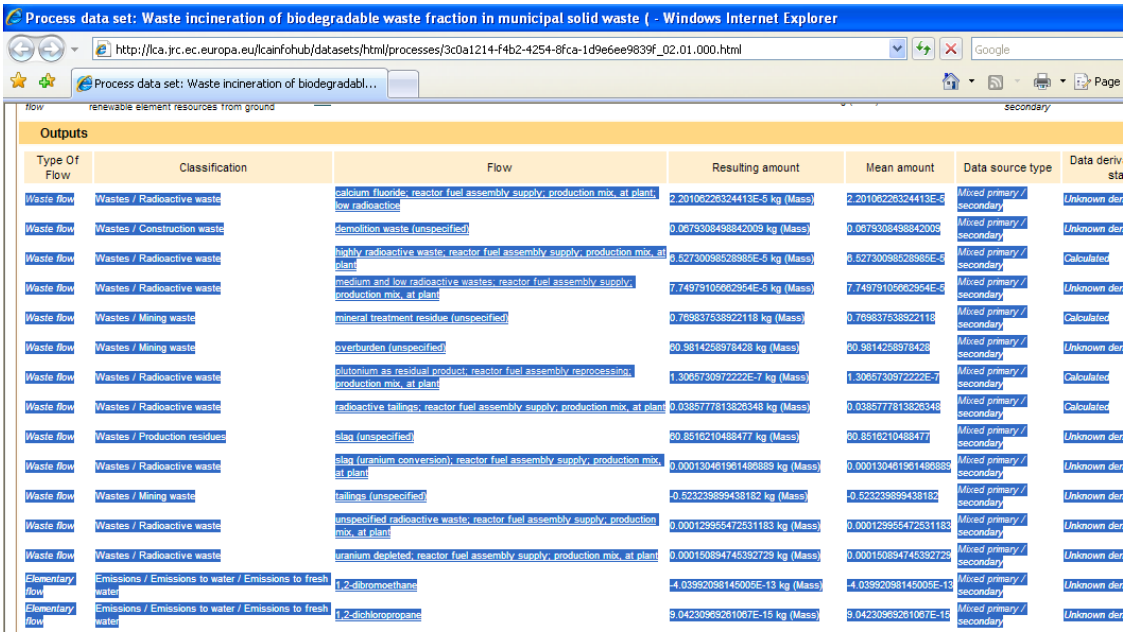


Figure 39 (Partial) View of ILCD HTML file with data to be imported highlighted

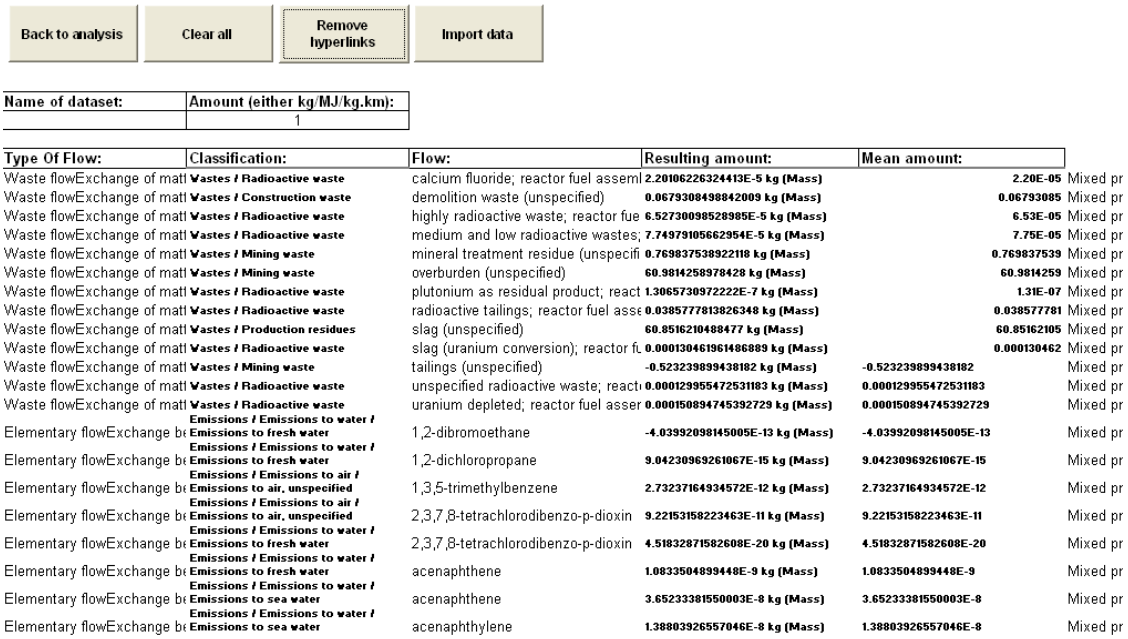


Figure 40 ILCD import template page after pasting the data and removing hyperlinks

16 Calculating water usage and water footprint

In addition to the carbon footprint, it is possible to estimate the impacts from water usage. Two values are estimated:

- water usage; and
- water footprints.

The former represents a simple sum of the total water usage in the life cycle of the product and the latter follows the methodology proposed by Pfister et al. (2009). The methodology used for water-related estmations is explained in Appendix 4.

The database containing the water usage data is different to that containing the main environmental impact data and the water-footprint is calculated in a separate area of the tool.

16.1 Switching between water footprint and value added

The button labelled 'Switch: Value added/Water footprint' may be used to alternate between a display of value added data (in blue) and water usage data (in green). This data is displayd in addition to the carbon footprint data (shown in red throughout).

16.2 Populating the water footprint data

By clicking on the 'View water usage/water footprint' the user is taken to the water usage screen. This is shown in
Figure 41. The total water usage for the stage is shown at the top of the screen along with the water footprint data. The difference between these is discussed below. If some water data are missing, a warning is shown at the top of the screen.

Back to previous level | Define water data | View graph | View missing data

Warning: some water usage data are missing

Total water usage: 4.38E-02 m^3/f.u.

Total water footprint (stress weighted): 1.31E-02 m^3 eq./f.u.

Data set	Stage	Amount /f.u.	Blue water (m^3/unit)	Green water (m^3/unit)	Total water (m^3/unit)	Blue water (m^3/f.u.)	Green water (m^3/f.u.)	Total water (m^3/f.u.)	Country of impact	Water stress index	Water footprint (stress weighted) (m^3 eq./f.u.)
Diesel	Raw materials -> Grape cultivation and harvest	7.00E-03 kg	0.76	0.00	0.76	5.32E-03	0.00	5.32E-03	Australia	0.40	2.14E-03
Diesel	Raw materials -> Wine production and bottling	1.00E-03 kg	0.76	0.00	0.76	7.60E-04	0.00	7.60E-04	N/A	N/A	0.00
N Fertiliser	Raw materials -> Grape cultivation and harvest	1.13E-02 kg	0.05	0.00	0.05	5.88E-04	0.00	5.88E-04	Australia	0.40	2.36E-04
P Fertiliser	Raw materials -> Grape cultivation and harvest	2.80E-02 kg	0.05	0.00	0.05	1.46E-03	0.00	1.46E-03	Australia	0.40	5.85E-04
Pesticides	Raw materials -> Grape cultivation and harvest	9.80E-03 kg	0.05	0.00	0.05	5.10E-04	0.00	5.10E-04	Australia	0.40	2.05E-04
Petrol	Raw materials -> Grape cultivation and harvest	3.00E-03 kg	0.76	0.00	0.76	2.28E-03	0.00	2.28E-03	Australia	0.40	9.17E-04
Petrol	Raw materials -> Wine production and bottling	6.00E-03 kg	0.76	0.00	0.76	4.56E-03	0.00	4.56E-03	N/A	N/A	0.00
sodium hydroxide, 50% in H2O, production mix, at plant	Raw materials -> Wine production and bottling	1.00E-03 kg	0.16	0.00	0.16	1.60E-04	0.00	1.60E-04	China	0.48	7.65E-05
electricity, medium voltage, production GB, at grid	Grape cultivation and harvest	0.13 MJ	4.00E-02	0.00	4.00E-02	5.28E-03	0.00	5.28E-03	Australia	0.40	2.12E-03
electricity, medium voltage, production GB, at grid	Wine production and bottling	0.41 MJ	4.00E-02	0.00	4.00E-02	1.64E-02	0.00	1.64E-02	Australia	0.40	6.59E-03
Wine (Green glass2, 0.75 l, 85%R, 15%L)	Wine production and bottling	0.47 kg	9.97E-04	1.27E-02	1.37E-02	4.72E-04	6.00E-03	6.47E-03	Australia	0.40	1.90E-04
					Total:	3.78E-02	6.00E-03	4.38E-02		Total:	1.31E-02

Figure 41 Water usage/footrpint screen

Water usage data are defined using the *Define water data* button. This brings up the the user form as shown in Figure 42a. By using the drop down menu at the top of the form, the user can select different stages. When a stage is selected, the two list boxes on the form will be populated. The top box will show data sets at this stage that currently have

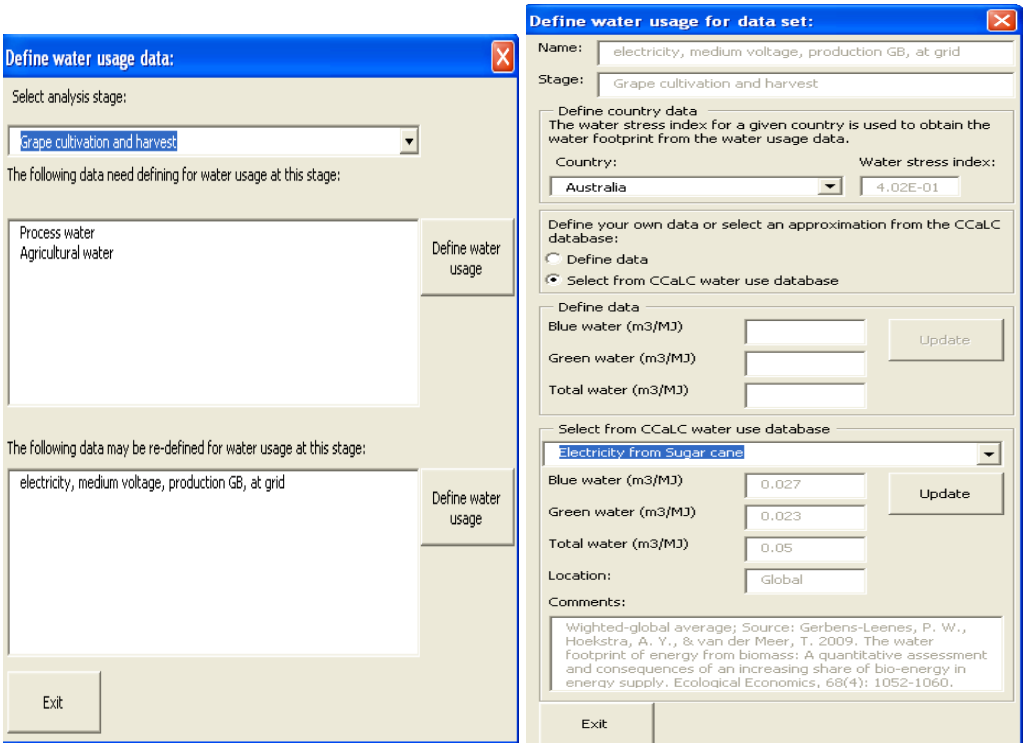
no water footprint data associated with them. The bottom box shows data sets for which water usage has been defined (and may be modified). The user can define data by selecting an item from the relevant list box and clicking the *Define water usage* button. The *Define water usage for data set* form is then shown (Figure 42b).

This form allows the user to associate water usage with a particular data set. There are two options:

- to enter user water usage data or
- to select an item from the CCaLC water use database to associate with the data set.

Water is defined as blue and green water, the sum of which represents the total water usage. A brief discussion of the meanings of these terms is given in Appendix 4. The user may choose which method to use by clicking on the radio buttons near the top of the form:

- if the *Define data* button is slected, the first section of textboxes will become active and the user can simply enter water usage data in terms of m^3 per unit;
- if the *Select from CCaLC* is selected then the user can select an item from the drop-down menu that approximates the original. Water usage data and references are shown greyed out and cannot be modified.



a) **b)**

Figure 42 Define water usage form

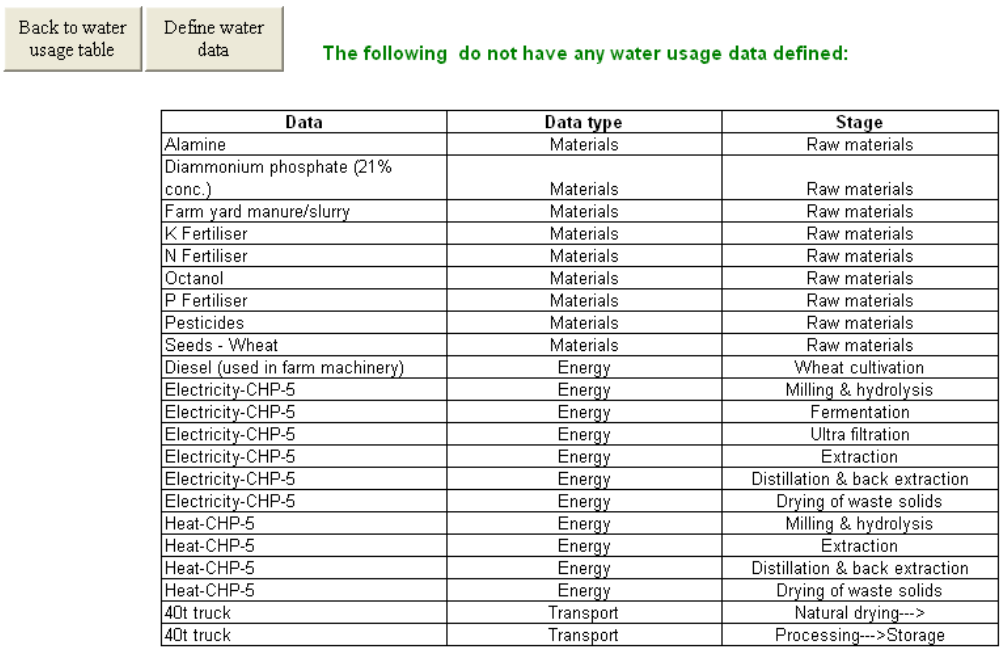
The drop-down menu at the top of the form contains a list of countries that have water-stress index values associated with them. This may be left blank, or a country selected in order to calculate water footprint data from the existing water usage data. The water

footprint is the product of the blue water usage for a specific data set and the water stress index. A further discussion of this is given in Appendix 4.

When the *Update* button is clicked, the water usage table is populated with data. The data is also shown in green at each of the stages in the analysis.

16.3 Missing water data

Missing water data can be viewed by clicking the *View missing data* button at the top of the screen (see Figure 43).



Data	Data type	Stage
Alamine	Materials	Raw materials
Diammonium phosphate (21% conc.)	Materials	Raw materials
Farm yard manure/slurry	Materials	Raw materials
K Fertiliser	Materials	Raw materials
N Fertiliser	Materials	Raw materials
Octanol	Materials	Raw materials
P Fertiliser	Materials	Raw materials
Pesticides	Materials	Raw materials
Seeds - Wheat	Materials	Raw materials
Diesel (used in farm machinery)	Energy	Wheat cultivation
Electricity-CHP-5	Energy	Milling & hydrolysis
Electricity-CHP-5	Energy	Fermentation
Electricity-CHP-5	Energy	Ultra filtration
Electricity-CHP-5	Energy	Extraction
Electricity-CHP-5	Energy	Distillation & back extraction
Electricity-CHP-5	Energy	Drying of waste solids
Heat-CHP-5	Energy	Milling & hydrolysis
Heat-CHP-5	Energy	Extraction
Heat-CHP-5	Energy	Distillation & back extraction
Heat-CHP-5	Energy	Drying of waste solids
40t truck	Transport	Natural drying--->
40t truck	Transport	Processing--->Storage

Figure 43 Table showing missing water data

16.4 Water usage graphs

Water usage and water footprint summary graphs can be viewed by clicking the *View graph* button. Graphs showing contribution of different stages to water usage are further also available.

17 Calculating other environmental impacts

In addition to the carbon and water footprints, the following other environmental impacts can be calculated in CCaLC:

- Acidification potential
- Eutrophication potential
- Ozone depletion potential
- Photochemical ozone creation potential
- Human toxicity potential.

The results for these impacts can be seen by clicking on the *View other environmental impacts* button at the top top level of the tool.

If the data for these impacts are incomplete, a message is displayed in red font, stating '**Warning: LCA data for some impacts are missing. To complete the analysis, click the button "Define other environmental impacts.".**

If the user wishes to define the above environmental impacts, it is necessary to supply the relevant data. To do this, click on the *Define other environmental impacts* button. This brings up the form as shown in Figure 44.

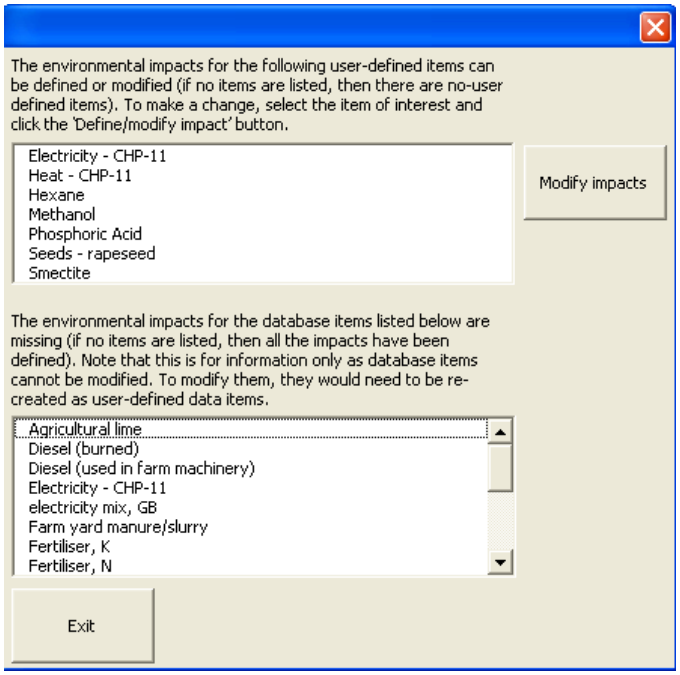


Figure 44 Modifying user data for other environmental impacts

The top text box Figure 44 shows the data sets for which other impact data are missing. To specify missing data, select a data item and then click on the *Define impact data* button.

The bottom text box shows the user defined data sets for which impact data can be modified. To modify data, select a data set and then click on the *Define impact* button. Both buttons bring up the same user form (Figure 45). The form allows the user to specify the impact data for a specific data set by filling in the text boxes and clicking the *Update data* button.

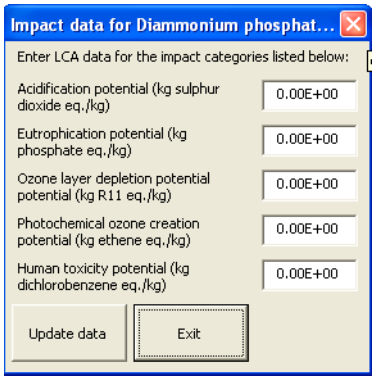
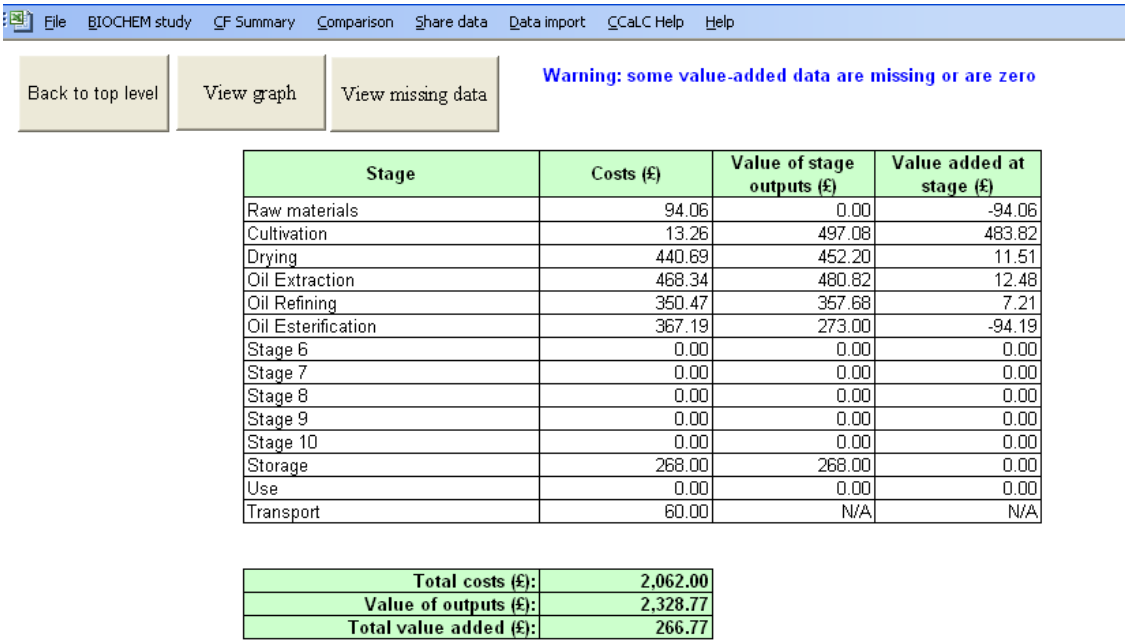


Figure 45 Define impact data user form

18 Calculating value added

Value added can be calculated by adding cost data at various points in the analysis (e.g. while defining materials, waste, transport etc.) The value added are shown in blue font above each stage as well as in the value-added tables.

To view a summary of the value added data, click on the *View value added analysis* button at the top of the tool. This takes the user to a summary value-added table (see Figure 46). The table lists the costs in each stage and value of the outputs, along with the overall value added for the analysis. If some cost data are missing, a warning is shown in blue stating that "*Some value-added data are missing or are zero"*. The missing data can be seen by clicking the *View missing data* button (Figure 47).



Stage	Costs (£)	Value of stage outputs (£)	Value added at stage (£)
Raw materials	94.06	0.00	-94.06
Cultivation	13.26	497.08	483.82
Drying	440.69	452.20	11.51
Oil Extraction	468.34	480.82	12.48
Oil Refining	350.47	357.68	7.21
Oil Esterification	367.19	273.00	-94.19
Stage 6	0.00	0.00	0.00
Stage 7	0.00	0.00	0.00
Stage 8	0.00	0.00	0.00
Stage 9	0.00	0.00	0.00
Stage 10	0.00	0.00	0.00
Storage	268.00	268.00	0.00
Use	0.00	0.00	0.00
Transport	60.00	N/A	N/A

Total costs (£):	**2,062.00**
Value of outputs (£):	**2,328.77**
Total value added (£):	**266.77**

Figure 46 Value added summary

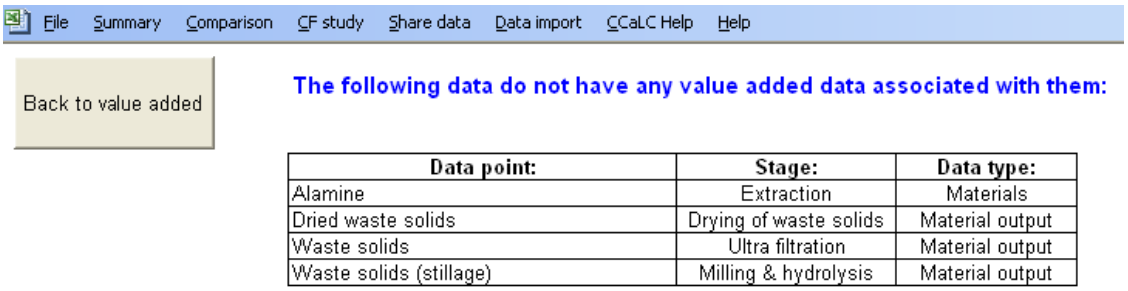


Figure 47 Summary of missing cost/value data

19 Example case studies

To aid the user in carrying out their own studies, the CCaLC BIOCHEM tool has built in 37example case studies in the following sectors:

- Biofeedstocks;
- Biofuels; and
- Food and drink.

Some of these are detailed below.

The case studies can be modified to suit the user and saved under a different name. The modified studies will be placed automatically within the User-defined case studies.

19.1 Biofeedstocks: PLA from wheat

19.1.1 Introduction

This section provides a brief description of the PLA case study based on Mortimer et al. (2009) and Mortimer et al. (2004).

The LCA study follows the ISO 14044: 2006 and PAS 2050: 2008 methodologies as far as possible. The following sections describe the goal, system boundaries and inventory data used for the case studies.

19.1.2 Goal and scope of the study

Goal of the study: The main goal of this study is to provide a carbon footprint analysis of PLA from wheat.

Functional unit: The functional unit of this study is defined as '1 tonne of PLA'.

Scope and system boundary: The system boundaries are from 'cradle-to-gate' for PLA. As shown in Figure 48, the life cycle stages include:

- raw materials extraction and production;

- wheat cultivation;
- PLA production processes (milling & hydrolysis, sterilisation and fermentation, filtration, purification & crystallisation, polymerisation & crystallisation and packaging); and
- production of co-products.

Some aspects of the life cycle supply chain are not considered due to limited data availability and they include:

- water used for agricultural and industrial processes; and
- wastewater discharged from agricultural and industrial processes; and
- transport of raw materials and waste.

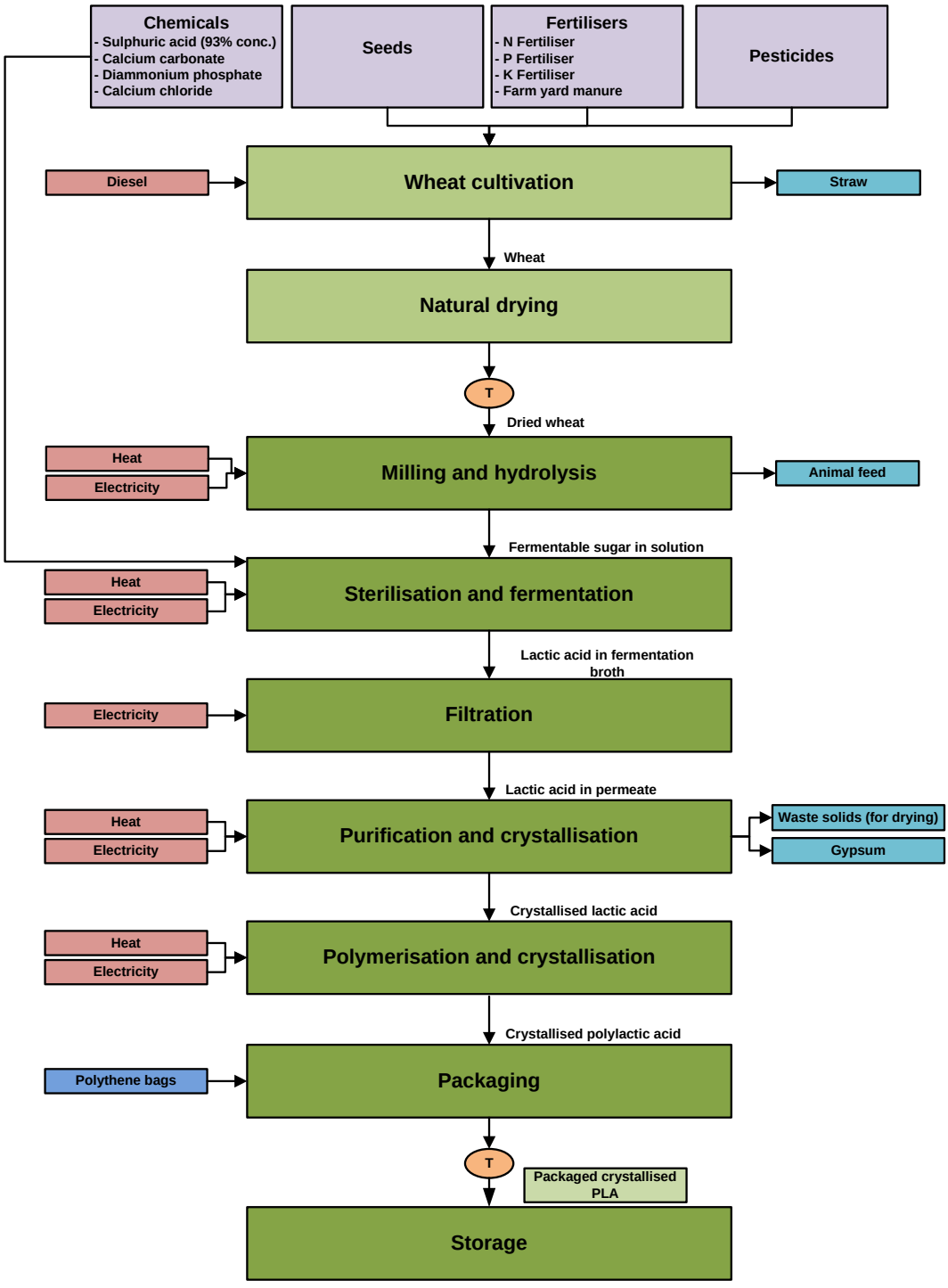


Figure 48 System boundary for PLA from wheat

19.1.3 Inventory analysis

Raw materials and energy: The inventories used for this study include the raw materials (fertilisers, pesticides and chemicals) and energy used for agricultural and industrial processes. These inventories are presented Table 1 and Table 2.

Table 1 Raw materials inventory

Raw materials	Quantity (tonne/functional unit)
Agricultural stage	
N Fertiliser	8.13E-02
Farm yard manure/slurry	1.35E+00
P Fertiliser	1.33E-02
K Fertiliser	1.67E-02
Pesticides	4.13E-04
Seeds – Wheat	7.49E-02
Production stage	
Sulphuric acid (93% conc.)	6.26E-01
Calcium Carbonate converted to CaO	4.22E-01
Diammonium phosphate (21% concentrated)	3.88E-02
Calcium chloride	1.25E-03
Packaging	
Polythene bags	0.004

Table 2 Energy inventory

Energy	Quantity (MJ/ functional unit)
Agricultural stage	
Diesel	3,457
Production stage	
Electricity	7,265
Heat	38,208

Transport: The transport distances in the life cycle stages are assumed to be as:

- Transport of wheat from farm to the PLA plant: 186 km using 40 t truck.
- Transport of PLA from farm to the storage: 450 km using 40 t truck.

Co-products: Co-products and their quantities, energy content and economic value are listed in Table 3.

Carbon storage in the product: 1.94 tonne CO_2 eq./ tonne of PLA.

Table 3 Co-products

Co-products	Quantity (tonnes)	Energy content (MJ/tonne)	Economic value (£/tonne)
Agricultural stage			
Straw	2.61	12,678	44
Production stage			
Animal feed	1.926	18,200	80
Gypsum	1.01	0	3

19.1.4 Impact assessment

The results of the carbon footprint analysis of PLA from wheat (economic allocation) as modelled in the CCaLC BIOCHEM tool are shown in Figure 49. The carbon footprints are 2.22 tonne CO_2 eq., per tonne of PLA. The 'production' stage is the major 'hot spot' along the supply chains of PLA (Figure 50). This is mainly due to the use of energy in the production of PLA.

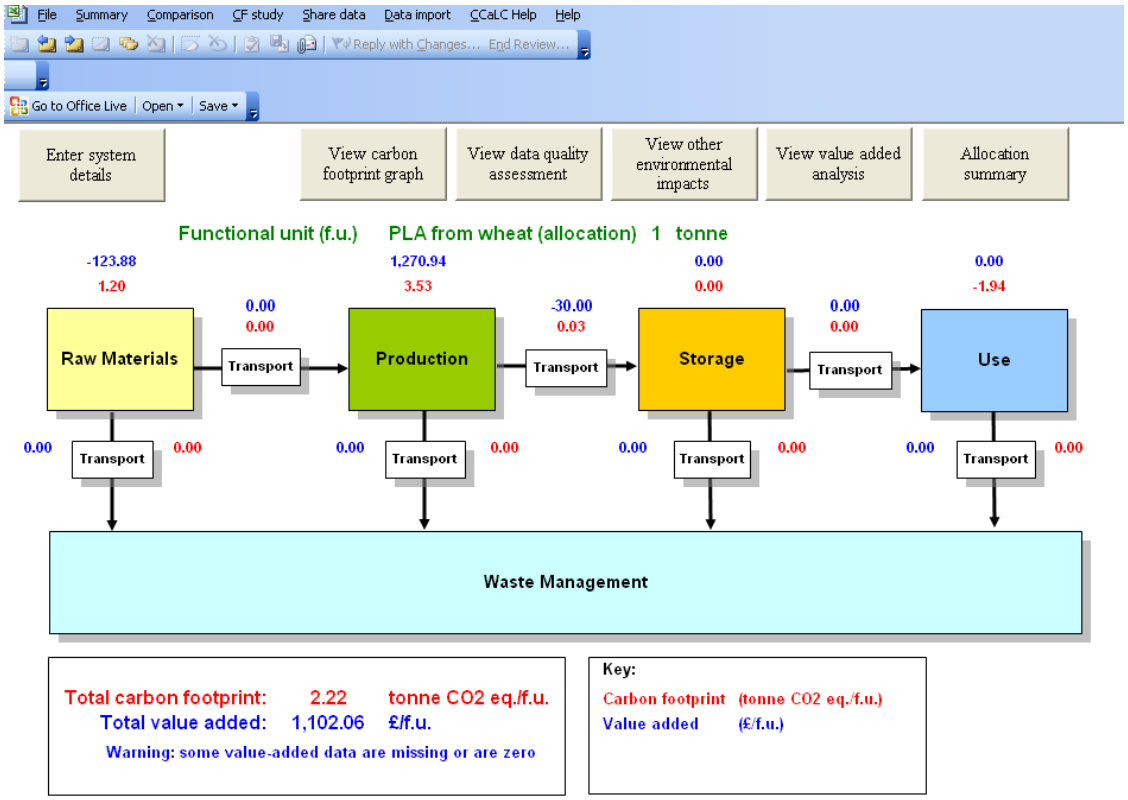


Figure 49 Carbon footprint of PLA from wheat

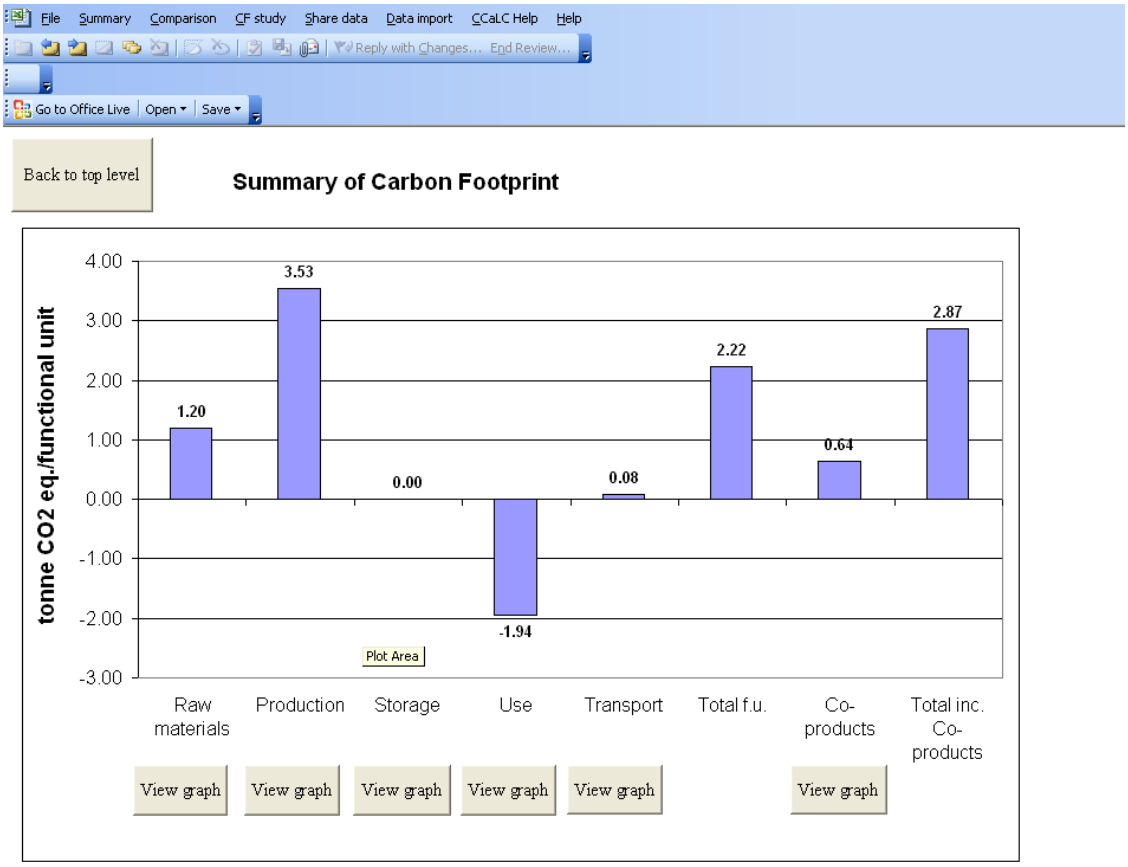


Figure 50 Contribution of life cycle stages to the total carbon footprint

References

Mortimer, N., A. Evans, A. Ashley, C. Hatto, V. Shaw, C. Whittaker and A. Hunter (2009) Life cycle assessment workbooks for selection of major renewable chemicals, NNFCC and North Energy.

Mortimer, N., M. Elsayed, R. Horne (2004) Energy and greenhouse gas emissions for bioethanol production from sugar beet and wheat grain, Sheffield Hallam University.

19.2 Food and Drink: Lunch at a sandwich bar

19.2.1 Introduction

This report aims to provide a brief description of a food case study in the CCaLC BIOCHEM tool. The study corresponds to the calculation of life cycle GHG emissions for a typical packed lunch consumed at a sandwich bar in the UK.

The LCA study follows the ISO 14044 and PAS 2050 methodology as far as possible. The following sections describe the goal, system boundaries and inventory data used for the case studies.

19.2.2 Goal and scope of the study

Goal of the study: The main goal of this study is to provide a carbon footprint analysis of a typical packed lunch consisting of a sandwich, potato crisps and a beverage.

Functional unit: The functional unit of this study is defined as 'an individual serving of packed lunch consisting of a packed sandwich, a packet of potato crisps and a bottle of soft drink consumed at a sandwich bar".

Scope and system boundary: The system boundaries of the study include 'cradle-to-grave' analysis for the lunch considered. As shown in Figure 51, the life cycle stages include:

- production of ingredients;
- manufacture of packaging;
- preparation of mayonnaise;
- preparation of ingredients;
- assembly of sandwich;
- consumption of lunch; and
- landfilling of waste food and packaging.

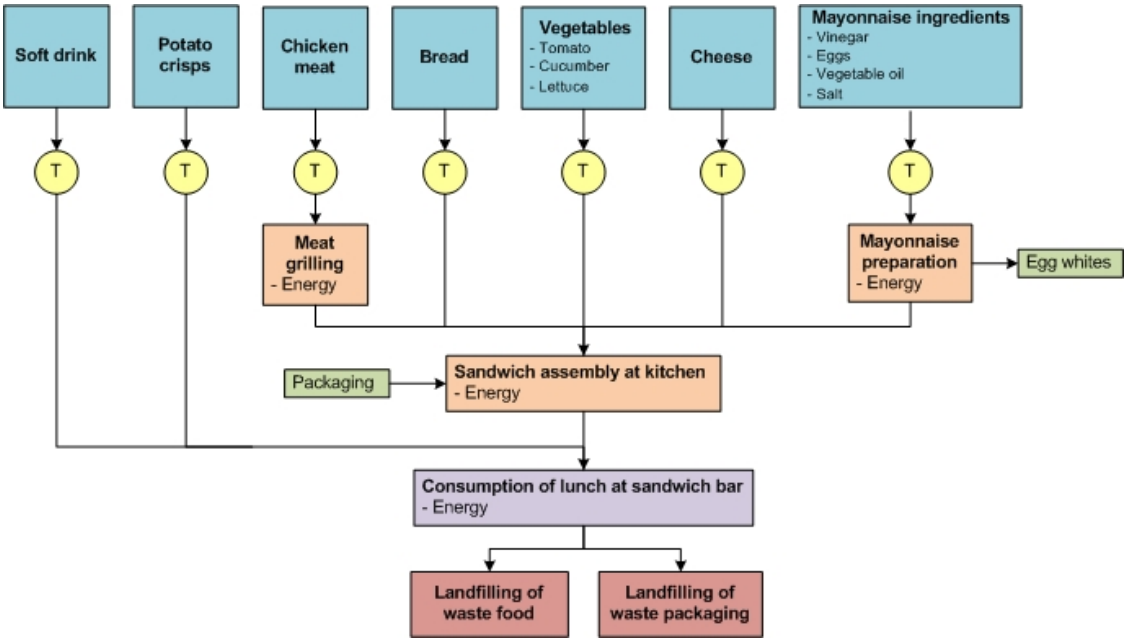


Figure 51 System boundaries for a packed lunch (T = Transport)

19.2.3 Inventory analysis

Raw materials and energy: These inventories are presented in Table 4 and Table 5.

Table 4 Materials inventory

Material	Life cycle stage	Quantity [g /functional unit]
Eggs	Mayonnaise preparation	10
Vinegar		2.20 E-03
Vegetable oil		1.52 E-02
Salt		3.00 E-04
Chicken meat	Meat grilling	60
Bread	Sandwich assembly	90
Cheese		40
Tomato		20
Lettuce		20
Cucumber		10
Potato crisps		35
Soft drink		500
Plastic packaging		12

Table 5 Energy inventory

Life cycle stage	Energy	Quantity [kWh /functional unit]
Mayonnaise preparation	Electricity	4.40 E-05
Meat grilling and kitchen operation	Electricity	1.10
	Heat from natural gas	1.88
Consumption at sandwich bar	Electricity	8.00 E-01
	Heat from natural gas	1.36

Transport: Transport of materials between life cycle stages is assumed to cover a distance of 50 km using a small van with a 7.5 tonne capacity.

Co-products and waste: In the mayonnaise preparation stage egg whites are produced as a co-product (3.8 g). At the consumption stage, 80 g of food waste are generated, corresponding to 30% of the sandwich (WRAP, 2008).

19.2.4 Impact assessment

The results of the carbon footprint analysis of the packed lunch as modelled in the CCaLC BIOCHEM tool are shown in Figure 52 and Figure 53. The total carbon footprint is 3.36 kg CO_2 eq. per packed lunch consumed by one person at a sandwich bar.

The raw materials, production and use stages contribute each roughly one third of the total life cycle GHG emissions: 36.4%, 35.8% and 27.0%, respectively.

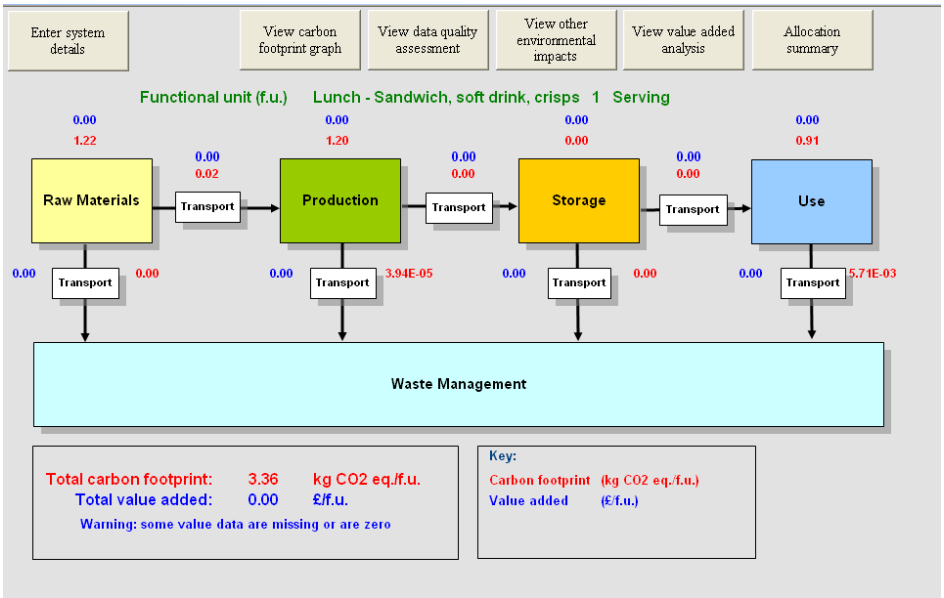


Figure 52 Carbon footprint of packed lunch

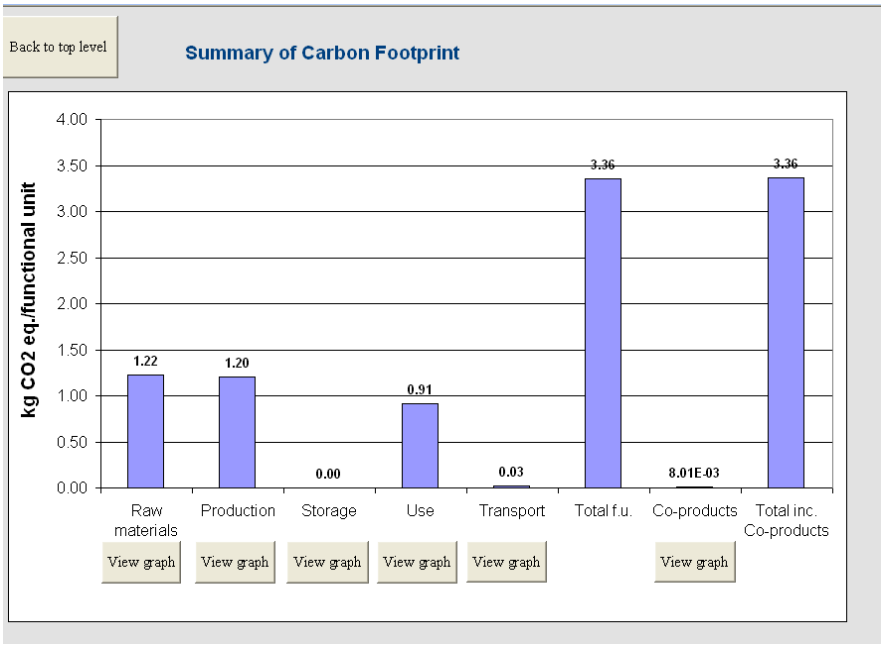


Figure 53 Life cycle stage contributions

References

BSI, 2008. *Publicly Available Specification PAS 2050:2008. Specification for the assessment of the life cycle greenhouse gas emissions of goods and services*. British Standards Institution, London.

WRAP, 2008. The food we waste. Waste and Resources Action Programme, Banbury, Oxon.

Appendix 1 – Methodology for caculating the carbon footprint of transport

Transport carbon footprint is calculated using the following equations:

NB. This applies to datasets within the CCaLC database and does not apply to Ecoinvent data for which limited amount of information is available. For Ecoinvent datasets, the transport density is not variable.

The density of the material transported is used to ascertain whether the transport is mass or volume limited:

If $\rho_{pack} < M_{max}/V_{max}$ **then** Volume limited

Else, if $\rho_{pack} > M_{max}/V_{max}$ **then** Mass limited

For Volume limited cases the total mass transported per load is:

$$M_{trans} = \rho_{pack} * V_{max} * f$$

For Mass limited cases the total mass transported per load is:

$$M_{trans} = M_{max} / \rho_{pack} * f$$

The number of functional units is then calculated per load:

$$f.u._{load} = M_{trans}/M_{material}$$

The carbon footprint per functional unit is then calculated:

$$c.f. = c.f._{load}/f.u._{load}$$

where:

ρ_{pack} is the packing density as defined by the user

M_{max} is the maximum transported mass

V_{max} is the maximum transported volume

M_{trans} is the total mass transported per load

f is the load factor (i.e. % loaded)

$f.u._{load}$ is the number of functional units per loaded vehicle

$M_{material}$ is the mass of material transported per functional unit

$c.f._{load}$ is the carbon footprint of the vehicle at the current load

c.f. is the carbon footprint per functional unit

For trucks returning empty, the carbon footprint per functional unit is augmented by the ratio of the carbon footprint of the vehicle when it is loaded and when it is empty, i.e.:

$$c.f._{total} = c.f. + c.f. * [(c.f._{empty} / c.f._{load})]$$

where:

$c.f._{total}$ is the total carbon footprint per functional unit

c.f. is the carbon footprint associated with transporting the material mass

$c.f._{empty}$ is the carbon footprint of the vehicle when running unloaded

Appendix 2 – List of data sets in the CCaLC database

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
1,3 Propanediol (PDO) from Corn - 1	Bio	Materials	3.3	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Corn - 2	Bio	Materials	2.8	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Corn - 3	Bio	Materials	2.3	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Corn - 4	Bio	Materials	3	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Corn - 5	Bio	Materials	2.3	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Corn - 6	Bio	Materials	2.7	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Corn - 7	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Corn - 8	Bio	Materials	3.4	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Corn - 9	Bio	Materials	3.5	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Lignocellulose - 1	Bio	Materials	2.1	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Lignocellulose - 2	Bio	Materials	1.9	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Lignocellulose - 3	Bio	Materials	1	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Lignocellulose - 4	Bio	Materials	1.6	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Lignocellulose - 5	Bio	Materials	0.9	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Lignocellulose - 6	Bio	Materials	1.6	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Lignocellulose - 7	Bio	Materials	0.1	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Lignocellulose - 8	Bio	Materials	3.4	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Lignocellulose - 9	Bio	Materials	3.5	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Sugar cane - 1	Bio	Materials	1.3	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Sugar cane - 2	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Sugar cane - 3	Bio	Materials	0.2	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Sugar	Bio	Materials	0.7	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
cane - 4							
1,3 Propanediol (PDO) from Sugar cane - 5	Bio	Materials	0	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Sugar cane - 6	Bio	Materials	0.9	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Sugar cane - 7	Bio	Materials	-0.6	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Sugar cane - 8	Bio	Materials	3.4	kg	2006	BREW (2006)	EU-25
1,3 Propanediol (PDO) from Sugar cane - 9	Bio	Materials	3.5	kg	2006	BREW (2006)	EU-25
1,4 butanediol from sugar beet - 1	Bio	Materials	3.163	kg	1996 - 2006	Mortimer et al. (2009)	UK
1,4 butanediol from sugar beet - 2	Bio	Materials	2.87	kg	1996 - 2006	Mortimer et al. (2009)	UK
1,4 butanediol from sugar beet - 3	Bio	Materials	2.868	kg	1996 - 2006	Mortimer et al. (2009)	UK
1,4 butanediol from sugar beet - 4	Bio	Materials	7.77	kg	1996 - 2006	Mortimer et al. (2009)	UK
1,4 butanediol from wheat at the point of sale - 1	Bio	Materials	1.923	kg	1996 - 2006	Mortimer et al. (2009)	UK
1,4 butanediol from wheat at the point of sale - 2	Bio	Materials	1.875	kg	1996 - 2006	Mortimer et al. (2009)	UK
1,4 butanediol from wheat at the point of sale - 3	Bio	Materials	2.533	kg	1996 - 2006	Mortimer et al. (2009)	UK
1,4 butanediol from wheat at the point of sale - 4	Bio	Materials	2.472	kg	1996 - 2006	Mortimer et al. (2009)	UK
Acetic Acid from Corn - 1	Bio	Materials	8.1	kg	2006	BREW (2006)	EU-25
Acetic Acid from Corn - 2	Bio	Materials	5.7	kg	2006	BREW (2006)	EU-25
Acetic Acid from Corn - 3	Bio	Materials	3.5	kg	2006	BREW (2006)	EU-25
Acetic Acid from Corn - 4	Bio	Materials	3.9	kg	2006	BREW (2006)	EU-25
Acetic Acid from Corn - 5	Bio	Materials	2.1	kg	2006	BREW (2006)	EU-25
Acetic Acid from Corn - 6	Bio	Materials	2.4	kg	2006	BREW (2006)	EU-25
Acetic Acid from Lignocellulose - 1	Bio	Materials	7	kg	2006	BREW (2006)	EU-25
Acetic Acid from Lignocellulose - 2	Bio	Materials	4.6	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Acetic Acid from Lignocellulose - 3	Bio	Materials	2.9	kg	2006	BREW (2006)	EU-25
Acetic Acid from Lignocellulose - 4	Bio	Materials	3.3	kg	2006	BREW (2006)	EU-25
Acetic Acid from Lignocellulose - 5	Bio	Materials	1.5	kg	2006	BREW (2006)	EU-25
Acetic Acid from Lignocellulose - 6	Bio	Materials	1.8	kg	2006	BREW (2006)	EU-25
Acetic Acid from Sugar cane - 1	Bio	Materials	6.2	kg	2006	BREW (2006)	EU-25
Acetic Acid from Sugar cane - 2	Bio	Materials	3.8	kg	2006	BREW (2006)	EU-25
Acetic Acid from Sugar cane - 3	Bio	Materials	2.5	kg	2006	BREW (2006)	EU-25
Acetic Acid from Sugar cane - 4	Bio	Materials	2.9	kg	2006	BREW (2006)	EU-25
Acetic Acid from Sugar cane - 5	Bio	Materials	1.1	kg	2006	BREW (2006)	EU-25
Acetic Acid from Sugar cane - 6	Bio	Materials	1.4	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Corn - 1	Bio	Materials	3.5	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Corn - 2	Bio	Materials	3	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Corn - 3	Bio	Materials	1.7	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Corn - 4	Bio	Materials	0.4	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Corn - 5	Bio	Materials	0.4	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Corn - 6	Bio	Materials	1	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Lignocellulose - 1	Bio	Materials	1.8	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Lignocellulose - 2	Bio	Materials	1.4	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Lignocellulose - 3	Bio	Materials	0.3	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Lignocellulose - 4	Bio	Materials	-1	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Lignocellulose - 5	Bio	Materials	-1	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Lignocellulose - 6	Bio	Materials	-0.4	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Acetone Butanol Ethanol (ABE) from Sugar cane - 1	Bio	Materials	0.7	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Sugar cane - 2	Bio	Materials	0.2	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Sugar cane - 3	Bio	Materials	-0.6	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Sugar cane - 4	Bio	Materials	-2	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Sugar cane - 5	Bio	Materials	-1.9	kg	2006	BREW (2006)	EU-25
Acetone Butanol Ethanol (ABE) from Sugar cane - 6	Bio	Materials	-1.3	kg	2006	BREW (2006)	EU-25
Acrylic Acid from Corn	Bio	Materials	2	kg	2006	BREW (2006)	EU-25
Acrylic Acid from Lignocellulose	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
Acrylic Acid from Sugar cane	Bio	Materials	0.7	kg	2006	BREW (2006)	EU-25
Acrylic acid from sugar beet - 1	Bio	Materials	0.757	kg	1996 - 2006	Mortimer et al. (2009)	UK
Acrylic acid from sugar beet - 2	Bio	Materials	0.433	kg	1996 - 2006	Mortimer et al. (2009)	UK
Acrylic acid from sugar beet - 3	Bio	Materials	0.449	kg	1996 - 2006	Mortimer et al. (2009)	UK
Acrylic acid from sugar beet - 4	Bio	Materials	5.951	kg	1996 - 2006	Mortimer et al. (2009)	UK
Acrylic acid from wheat grain - 1	Bio	Materials	-0.188	kg	1996 - 2005	Mortimer et al. (2009)	UK
Acrylic acid from wheat grain - 2	Bio	Materials	-0.151	kg	1996 - 2005	Mortimer et al. (2009)	UK
Acrylic acid from wheat grain - 3	Bio	Materials	0.052	kg	1996 - 2005	Mortimer et al. (2009)	UK
Acrylic acid from wheat grain - 4	Bio	Materials	0.868	kg	1996 - 2005	Mortimer et al. (2009)	UK
Adipic Acid from Corn - 1	Bio	Materials	11	kg	2006	BREW (2006)	EU-25
Adipic Acid from Corn - 2	Bio	Materials	3.6	kg	2006	BREW (2006)	EU-25
Adipic Acid from Corn - 3	Bio	Materials	2.5	kg	2006	BREW (2006)	EU-25
Adipic Acid from Lignocellulose - 1	Bio	Materials	7.8	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Adipic Acid from Lignocellulose - 2	Bio	Materials	2.4	kg	2006	BREW (2006)	EU-25
Adipic Acid from Lignocellulose - 3	Bio	Materials	1.3	kg	2006	BREW (2006)	EU-25
Adipic Acid from Sugar cane - 1	Bio	Materials	5.6	kg	2006	BREW (2006)	EU-25
Adipic Acid from Sugar cane - 2	Bio	Materials	1.6	kg	2006	BREW (2006)	EU-25
Adipic Acid from Sugar cane - 3	Bio	Materials	0.5	kg	2006	BREW (2006)	EU-25
Butanol from wheat grain - 1	Bio	Materials	-0.18	kg	1996 - 2006	Mortimer et al. (2009)	UK
Butanol from wheat grain - 2	Bio	Materials	2.485	kg	1996 - 2006	Mortimer et al. (2009)	UK
Butanol from wheat grain - 3	Bio	Materials	2.549	kg	1996 - 2006	Mortimer et al. (2009)	UK
Butanol from wheat grain - 4	Bio	Materials	0.736	kg	1996 - 2006	Mortimer et al. (2009)	UK
Caparolactam from Corn	Bio	Materials	2.4	kg	2006	BREW (2006)	EU-25
Caparolactam from Lignocellulose	Bio	Materials	1	kg	2006	BREW (2006)	EU-25
Caparolactam from Sugar cane	Bio	Materials	0	kg	2006	BREW (2006)	EU-25
Citric Acid from Corn - 1	Bio	Materials	4.3	kg	2006	BREW (2006)	EU-25
Citric Acid from Corn - 2	Bio	Materials	4.5	kg	2006	BREW (2006)	EU-25
Citric Acid from Corn - 3	Bio	Materials	4.6	kg	2006	BREW (2006)	EU-25
Citric Acid from Corn - 4	Bio	Materials	1.3	kg	2006	BREW (2006)	EU-25
Citric Acid from Lignocellulose - 1	Bio	Materials	4.3	kg	2006	BREW (2006)	EU-25
Citric Acid from Lignocellulose - 2	Bio	Materials	3.1	kg	2006	BREW (2006)	EU-25
Citric Acid from Lignocellulose - 3	Bio	Materials	2.6	kg	2006	BREW (2006)	EU-25
Citric Acid from Lignocellulose - 4	Bio	Materials	0.7	kg	2006	BREW (2006)	EU-25
Citric Acid from Sugar cane - 1	Bio	Materials	4.3	kg	2006	BREW (2006)	EU-25
Citric Acid from Sugar cane - 2	Bio	Materials	2.1	kg	2006	BREW (2006)	EU-25
Citric Acid from Sugar cane - 3	Bio	Materials	1.3	kg	2006	BREW (2006)	EU-25
Citric Acid from Sugar cane - 4	Bio	Materials	0.3	kg	2006	BREW (2006)	EU-25
Ethanol from Corn - 3	Bio	Materials	1.5	kg	2006	BREW (2006)	EU-25
Ethanol from Corn - 4	Bio	Materials	1.3	kg	2006	BREW (2006)	EU-25
Ethanol from Corn - 5	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
Ethanol from Corn - 1	Bio	Materials	1.7	kg	2006	BREW (2006)	EU-25
Ethanol from Corn - 2	Bio	Materials	2.1	kg	2006	BREW (2006)	EU-25
Ethanol from Lignocellulose - 1	Bio	Materials	0.5	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Ethanol from Lignocellulose - 2	Bio	Materials	0.2	kg	2006	BREW (2006)	EU-25
Ethanol from Lignocellulose - 3	Bio	Materials	0.1	kg	2006	BREW (2006)	EU-25
Ethanol from Lignocellulose - 4	Bio	Materials	0	kg	2006	BREW (2006)	EU-25
Ethanol from Sugar cane - 1	Bio	Materials	-0.3	kg	2006	BREW (2006)	EU-25
Ethanol from Sugar cane - 2	Bio	Materials	-0.6	kg	2006	BREW (2006)	EU-25
Ethanol from Sugar cane - 3	Bio	Materials	-0.7	kg	2006	BREW (2006)	EU-25
Ethanol from Sugar cane - 4	Bio	Materials	-0.8	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Corn - 1	Bio	Materials	3.9	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Corn - 2	Bio	Materials	3.6	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Corn - 3	Bio	Materials	2.6	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Corn - 4	Bio	Materials	2.8	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Corn - 5	Bio	Materials	2	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Corn - 6	Bio	Materials	2.3	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Corn - 7	Bio	Materials	2.9	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Lignocellulose - 1	Bio	Materials	3.4	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Lignocellulose - 2	Bio	Materials	3.1	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Lignocellulose - 3	Bio	Materials	1.6	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Lignocellulose - 4	Bio	Materials	1.8	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Lignocellulose - 5	Bio	Materials	1.9	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Lignocellulose - 6	Bio	Materials	3.9	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Lignocellulose - 7	Bio	Materials	4.9	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Sugar cane - 1	Bio	Materials	3.1	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Sugar cane - 2	Bio	Materials	2.8	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Sugar cane - 3	Bio	Materials	0.9	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Sugar cane - 4	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Sugar cane - 5	Bio	Materials	0.4	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Sugar cane - 6	Bio	Materials	1.5	kg	2006	BREW (2006)	EU-25
Ethyl lactate from Sugar cane - 7	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
Ethylene from Corn - 1	Bio	Materials	2.5	kg	2006	BREW (2006)	EU-25
Ethylene from Corn - 2	Bio	Materials	2	kg	2006	BREW (2006)	EU-25
Ethylene from Lignocellulose - 1	Bio	Materials	0.5	kg	2006	BREW (2006)	EU-25
Ethylene from Lignocellulose - 2	Bio	Materials	0	kg	2006	BREW (2006)	EU-25
Ethylene from Sugar cane - 1	Bio	Materials	-0.9	kg	2006	BREW (2006)	EU-25
Ethylene from Sugar cane - 2	Bio	Materials	-1.4	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Lactic Acid from Corn - 1	Bio	Materials	2.7	kg	2006	BREW (2006)	EU-25
Lactic Acid from Corn - 2	Bio	Materials	2.4	kg	2006	BREW (2006)	EU-25
Lactic Acid from Corn - 3	Bio	Materials	2	kg	2006	BREW (2006)	EU-25
Lactic Acid from Corn - 4	Bio	Materials	1.9	kg	2006	BREW (2006)	EU-25
Lactic Acid from Corn - 5	Bio	Materials	1.8	kg	2006	BREW (2006)	EU-25
Lactic Acid from Corn - 6	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
Lactic Acid from Corn - 7	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
Lactic Acid from Lignocellulose - 1	Bio	Materials	2.1	kg	2006	BREW (2006)	EU-25
Lactic Acid from Lignocellulose - 2	Bio	Materials	1.7	kg	2006	BREW (2006)	EU-25
Lactic Acid from Lignocellulose - 3	Bio	Materials	1.3	kg	2006	BREW (2006)	EU-25
Lactic Acid from Lignocellulose - 4	Bio	Materials	1.3	kg	2006	BREW (2006)	EU-25
Lactic Acid from Lignocellulose - 5	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
Lactic Acid from Lignocellulose - 6	Bio	Materials	0.6	kg	2006	BREW (2006)	EU-25
Lactic Acid from Lignocellulose - 7	Bio	Materials	0.6	kg	2006	BREW (2006)	EU-25
Lactic Acid from Sugar cane - 1	Bio	Materials	1.6	kg	2006	BREW (2006)	EU-25
Lactic Acid from Sugar cane - 2	Bio	Materials	1.3	kg	2006	BREW (2006)	EU-25
Lactic Acid from Sugar cane - 3	Bio	Materials	0.9	kg	2006	BREW (2006)	EU-25
Lactic Acid from Sugar cane - 4	Bio	Materials	0.8	kg	2006	BREW (2006)	EU-25
Lactic Acid from Sugar cane - 5	Bio	Materials	0.8	kg	2006	BREW (2006)	EU-25
Lactic Acid from Sugar cane - 6	Bio	Materials	0.2	kg	2006	BREW (2006)	EU-25
Lactic Acid from Sugar cane - 7	Bio	Materials	0.2	kg	2006	BREW (2006)	EU-25
LLDPE from Sugar Beet - 1	Bio	Materials	-1.372	kg	1996 - 2006	Mortimer et al. (2009)	UK
LLDPE from Sugar Beet - 2	Bio	Materials	-0.595	kg	1996 - 2006	Mortimer et al. (2009)	UK
LLDPE from Sugar Beet - 3	Bio	Materials	-0.481	kg	1996 - 2006	Mortimer et al. (2009)	UK
LLDPE from Sugar Beet - 4	Bio	Materials	11.815	kg	1996 - 2006	Mortimer et al. (2009)	UK
LLDPE from wheat grain - 1	Bio	Materials	-1.043	kg	1996 - 2005	Mortimer et al. (2009)	UK
LLDPE from wheat grain - 2	Bio	Materials	-0.529	kg	1996 - 2005	Mortimer et al. (2009)	UK
LLDPE from wheat grain - 3	Bio	Materials	0.249	kg	1996 - 2005	Mortimer et al. (2009)	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
LLDPE from wheat grain - 4	Bio	Materials	2.166	kg	1996 - 2005	Mortimer et al. (2009)	UK
Lysine from Corn - 1	Bio	Materials	10.3	kg	2006	BREW (2006)	EU-25
Lysine from Corn - 2	Bio	Materials	3.7	kg	2006	BREW (2006)	EU-25
Lysine from Corn - 3	Bio	Materials	8.1	kg	2006	BREW (2006)	EU-25
Lysine from Corn - 4	Bio	Materials	6.7	kg	2006	BREW (2006)	EU-25
Lysine from Lignocellulose - 1	Bio	Materials	8.7	kg	2006	BREW (2006)	EU-25
Lysine from Lignocellulose - 2	Bio	Materials	1.9	kg	2006	BREW (2006)	EU-25
Lysine from Lignocellulose - 3	Bio	Materials	5.6	kg	2006	BREW (2006)	EU-25
Lysine from Lignocellulose - 4	Bio	Materials	4.9	kg	2006	BREW (2006)	EU-25
Lysine from Sugar cane - 1	Bio	Materials	7	kg	2006	BREW (2006)	EU-25
Lysine from Sugar cane - 2	Bio	Materials	0	kg	2006	BREW (2006)	EU-25
Lysine from Sugar cane - 3	Bio	Materials	3.2	kg	2006	BREW (2006)	EU-25
Lysine from Sugar cane - 4	Bio	Materials	3.1	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 1	Bio	Materials	4.6	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 10	Bio	Materials	2.7	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 11	Bio	Materials	2.9	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 12	Bio	Materials	1.9	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 2	Bio	Materials	7.6	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 3	Bio	Materials	1.9	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 4	Bio	Materials	5.7	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 5	Bio	Materials	6.7	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 6	Bio	Materials	5.6	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 7	Bio	Materials	6.6	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Corn - 8	Bio	Materials	9.5	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Polyhydroxyalkanoates (PHA) from Corn - 9	Bio	Materials	7.5	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 1	Bio	Materials	3.2	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 10	Bio	Materials	1	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 11	Bio	Materials	1.6	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 12	Bio	Materials	0.6	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 2	Bio	Materials	7.6	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 3	Bio	Materials	0.1	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 4	Bio	Materials	3.9	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 5	Bio	Materials	5	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 6	Bio	Materials	3.8	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 7	Bio	Materials	4.9	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 8	Bio	Materials	9.5	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Lignocellulose - 9	Bio	Materials	5.8	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 1	Bio	Materials	2.2	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 10	Bio	Materials	-0.1	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 11	Bio	Materials	0.7	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 12	Bio	Materials	-0.3	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Polyhydroxyalkanoates (PHA) from Sugar cane - 2	Bio	Materials	7.6	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 3	Bio	Materials	-1.2	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 4	Bio	Materials	2.8	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 5	Bio	Materials	3.8	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 6	Bio	Materials	2.7	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 7	Bio	Materials	3.7	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 8	Bio	Materials	9.5	kg	2006	BREW (2006)	EU-25
Polyhydroxyalkanoates (PHA) from Sugar cane - 9	Bio	Materials	4.7	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Corn - 1	Bio	Materials	4.2	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Corn - 2	Bio	Materials	3.7	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Corn - 3	Bio	Materials	3.3	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Corn - 4	Bio	Materials	3.2	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Corn - 5	Bio	Materials	3.1	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Corn - 6	Bio	Materials	2.2	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Corn - 7	Bio	Materials	2.5	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Lignocellulose - 1	Bio	Materials	3.4	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Lignocellulose - 2	Bio	Materials	2.9	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Lignocellulose - 3	Bio	Materials	2.4	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Lignocellulose - 4	Bio	Materials	2.3	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Lignocellulose - 5	Bio	Materials	2.2	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Lignocellulose - 6	Bio	Materials	1.4	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Polylactic acid (PLA) from Lignocellulose - 7	Bio	Materials	1.7	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Sugar cane - 1	Bio	Materials	2.8	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Sugar cane - 2	Bio	Materials	2.4	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Sugar cane - 3	Bio	Materials	1.8	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Sugar cane - 4	Bio	Materials	1.8	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Sugar cane - 5	Bio	Materials	1.7	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Sugar cane - 6	Bio	Materials	0.9	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from Sugar cane - 7	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25
Polylactic acid (PLA) from sugar beet - 1	Bio	Materials	1.093	kg	1996 - 2006	Mortimer et al. (2009)	UK
Polylactic acid (PLA) from sugar beet - 2	Bio	Materials	2.38	kg	1996 - 2006	Mortimer et al. (2009)	UK
Polylactic acid (PLA) from sugar beet - 3	Bio	Materials	2.242	kg	1996 - 2006	Mortimer et al. (2009)	UK
Polylactic acid (PLA) from sugar beet - 4	Bio	Materials	7.432	kg	1996 - 2006	Mortimer et al. (2009)	UK
Polylactic acid (PLA) from wheat - 2	Bio	Materials	1.713	kg	1996 - 2006	Mortimer et al. (2009)	UK
Polylactic acid (PLA) from wheat - 3	Bio	Materials	2.337	kg	1996 - 2006	Mortimer et al. (2009)	UK
Polylactic acid (PLA) from wheat - 4	Bio	Materials	2.21	kg	1996 - 2006	Mortimer et al. (2009)	UK
Polylactic acid (PLA) from wheat - 1	Bio	Materials	0.603	kg	1996 - 2006	Mortimer et al. (2009)	UK
Butanol from sugar beet - 1	Bio	Materials	1.586	kg	1996 - 2006	Mortimer et al. (2009)	UK
Butanol from sugar beet - 2	Bio	Materials	5.102	kg	2006	Mortimer et al. (2009)	UK
Butanol from sugar beet - 3	Bio	Materials	4.73	kg	1996 -	Mortimer et al. (2009)	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Butanol from sugar beet - 4	Bio	Materials	24.942	kg	2006 1996 - 2006	Mortimer et al. (2009)	UK
Polytrimethylene terephthalate from Corn - 1	Bio	Materials	4.7	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Corn - 2	Bio	Materials	4.9	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Corn - 3	Bio	Materials	4.5	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Corn - 4	Bio	Materials	4.8	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Corn - 5	Bio	Materials	4.5	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Corn - 6	Bio	Materials	4.7	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Corn - 7	Bio	Materials	4.1	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Corn - 8	Bio	Materials	4.9	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Corn - 9	Bio	Materials	5	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Lignocellulose - 1	Bio	Materials	4.4	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Lignocellulose - 2	Bio	Materials	4.4	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Lignocellulose - 3	Bio	Materials	4	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Lignocellulose - 4	Bio	Materials	4.3	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Lignocellulose - 5	Bio	Materials	4	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Lignocellulose - 6	Bio	Materials	4.3	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Lignocellulose - 7	Bio	Materials	3.7	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Polytrimethylene terephthalate from Lignocellulose - 8	Bio	Materials	4.9	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Lignocellulose - 9	Bio	Materials	5	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Sugar cane - 1	Bio	Materials	4.1	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Sugar cane - 2	Bio	Materials	4.2	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Sugar cane - 3	Bio	Materials	3.7	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Sugar cane - 4	Bio	Materials	3.9	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Sugar cane - 5	Bio	Materials	3.7	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Sugar cane - 6	Bio	Materials	4	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Sugar cane - 7	Bio	Materials	3.5	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Sugar cane - 8	Bio	Materials	4.9	kg	2006	BREW (2006)	EU-25
Polytrimethylene terephthalate from Sugar cane - 9	Bio	Materials	5	kg	2006	BREW (2006)	EU-25
Succinic Acid from Corn - 1	Bio	Materials	4.6	kg	2006	BREW (2006)	EU-25
Succinic Acid from Corn - 2	Bio	Materials	2.3	kg	2006	BREW (2006)	EU-25
Succinic Acid from Corn - 3	Bio	Materials	2.8	kg	2006	BREW (2006)	EU-25
Succinic Acid from Corn - 4	Bio	Materials	2	kg	2006	BREW (2006)	EU-25
Succinic Acid from Corn - 5	Bio	Materials	2.9	kg	2006	BREW (2006)	EU-25
Succinic Acid from Corn - 6	Bio	Materials	1.8	kg	2006	BREW (2006)	EU-25
Succinic Acid from Lignocellulose - 1	Bio	Materials	4	kg	2006	BREW (2006)	EU-25
Succinic Acid from Lignocellulose - 2	Bio	Materials	1.7	kg	2006	BREW (2006)	EU-25
Succinic Acid from Lignocellulose - 3	Bio	Materials	2.2	kg	2006	BREW (2006)	EU-25
Succinic Acid from Lignocellulose - 4	Bio	Materials	1.5	kg	2006	BREW (2006)	EU-25
Succinic Acid from Lignocellulose - 5	Bio	Materials	2.4	kg	2006	BREW (2006)	EU-25
Succinic Acid from Lignocellulose - 6	Bio	Materials	1.2	kg	2006	BREW (2006)	EU-25

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Succinic Acid from Sugar cane - 1	Bio	Materials	3.5	kg	2006	BREW (2006)	EU-25
Succinic Acid from Sugar cane - 2	Bio	Materials	1.3	kg	2006	BREW (2006)	EU-25
Succinic Acid from Sugar cane - 3	Bio	Materials	1.8	kg	2006	BREW (2006)	EU-25
Succinic Acid from Sugar cane - 4	Bio	Materials	1.1	kg	2006	BREW (2006)	EU-25
Succinic Acid from Sugar cane - 5	Bio	Materials	2.1	kg	2006	BREW (2006)	EU-25
Succinic Acid from Sugar cane - 6	Bio	Materials	0.9	kg	2006	BREW (2006)	EU-25
Aerated concrete block	Building materials	Materials	0.46675421	kg	2004	ILCD	Europe
Aerated concrete block - reinforced	Building materials	Materials	0.51920036 2	kg	2004	ILCD	Europe
Concrete - pre cast	Building materials	Materials	0.12089115	kg	2006	ILCD	Europe
Concrete block - lightweight	Building materials	Materials	0.25940572 7	kg	2004	ILCD	Europe
Gravel	Building materials	Materials	0.00339477 3	kg	2006	ILCD	Europe
Gypsum	Building materials	Materials	0.00265946 7	kg	2005	ILCD	Germany
Gypsum plaster - alpha hemihydrates	Building materials	Materials	0.24339488 3	kg	2002	ILCD	Germany
Gypsum plaster - beta hemihydrates	Building materials	Materials	0.10762469 4	kg	2002	ILCD	Germany
Gypsum2	Building materials	Materials	0.04700000	kg	2006	Mortimer, N. et al. (2009)	UK
Limestone	Building materials	Materials	1.06E-01	kg	2001	Natural stone council	USA
Oriented strand board	Building materials	Materials	0.67419666 6	kg	2005	ILCD	EU-27
Particle board - P2	Building materials	Materials	0.87525124 9	kg	2005	ILCD	EU-27
Particle board - P5	Building materials	Materials	0.91139923 5	kg	2005	ILCD	EU-27
Portland cement	Building materials	Materials	0.90040826 2	kg	2006	ILCD	Europe
Rock wool	Building materials	Materials	1.13593151 1	kg	2006	ILCD	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Sand 0/2	Building materials	Materials	0.00244784 1	kg	2006	ILCD	Europe
Stone - crushed	Building materials	Materials	0.01395974 2	kg	2006	ILCD	Europe
Acetone (dimethylacetone)	Chemicals	Materials	2.27E+00	kg	2005	PlasticsEurope	Europe
Acrylonitrile (AN)	Chemicals	Materials	3.34596930 5	kg	2004	PlasticsEurope	Europe
Acrylonitrile-butadiene-styrene granulate (ABS)	Chemicals	Materials	3.87E+00	kg	2005	PlasticsEurope	Europe
Additives and solvents, for paint	Chemicals	Materials	1.09711633	kg	2009	CCaLC, confidential	Europe
Alamine	Chemicals	Materials	1.29923	kg	2006	Mortimer, N., et al. (2009)	UK
Alamine	Chemicals	Materials	1.29923	kg	2006	Mortimer, N., et al. (2009)	UK
Ammonia (liquid)	Chemicals	Materials	2.41949696 7	kg	2004	PlasticsEurope	Europe
Animal feed	Chemicals	Materials	0.49100000	kg	2006	Mortimer, N. et al. (2009)	UK
Animal feed2	Chemicals	Materials	0.33700000	kg	2006		UK
Benzene	Chemicals	Materials	1.81499609 5	kg	2004	PlasticsEurope	Europe
Binder (50% conc.)	Chemicals	Materials	1.96660945	kg	2009	CCaLC, confidential	Europe
Brine	Chemicals	Materials	0.16786319 9	kg	2004	PlasticsEurope	Europe
Butadiene	Chemicals	Materials	1.19814420 7	kg	2004	PlasticsEurope	Europe
Butene	Chemicals	Materials	1.55818835 3	kg	2004	PlasticsEurope	Europe
Calcium anhydrite	Chemicals	Materials	0.09955396 4	kg	2002	ILCD	Germany
Calcium chloride	Chemicals	Materials	0.60511920	kg	2006	Mortimer, N., et al. (2009)	UK
Calcium chloride (CaCl)	Chemicals	Materials	0.60511920	kg	2006	Mortimer, N., et al. (2009)	UK
Calcium distearate	Chemicals	Materials	2.13E+00	kg	2009	The University of Manchester	UK
Calcium silicate	Chemicals	Materials	0.14685277	kg	2006	ILCD	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
CaO from calcium carbonate	Chemicals	Materials	1.08700000	kg	2006	Mortimer, N., et al. (2009)	UK
Carbon dioxide	Chemicals	Materials	0.26486312	kg	2006	Mortimer, N., et al. (2009)	UK
Chlorine	Chemicals	Materials	1.16119965	kg	2004	PlasticsEurope	Europe
Coke	Chemicals	Materials	3.33729200	kg	2006	Mortimer, N., et al. (2009)	UK
Crude oil	Chemicals	Materials	0.19769196	kg	2004	PlasticsEurope	Europe
Di (2-ethylhexyl) phthalate (DEHP)	Chemicals	Materials	1.99E+00	kg	2001	ECPI	Europe
Diammonium phosphate (21% conc.)	Chemicals	Materials	0.06064600	kg	2006	Mortimer, N., et al. (2009)	UK
Dichloroethane	Chemicals	Materials	1.67041218	kg	2004	PlasticsEurope	Europe
Diesel	Chemicals	Materials	0.38808004	kg	2003	ILCD	EU-15
Enzyme Alpha Amylase	Chemicals	Materials	1.59735490	kg	2006	Mortimer, N., et al. (2009)	UK
Enzyme AMG	Chemicals	Materials	2.24955000	kg	2006	Mortimer, N., et al. (2009)	UK
Epoxy resin	Chemicals	Materials	8.31886367	kg	2004	PlasticsEurope	Europe
Ethanol	Chemicals	Materials	2.23383000	kg	2006		UK
Ethene	Chemicals	Materials	1.42459945	kg	2004	PlasticsEurope	Europe
Ethyl benzene	Chemicals	Materials	1.98582487	kg	2004	PlasticsEurope	Europe
Filler	Chemicals	Materials	0.04955408	kg	2009	CCaLC, confidential	Europe
Gasoline	Chemicals	Materials	0.68765984	kg	2003	ILCD	EU-15
Glass wool	Chemicals	Materials	2.80518295	kg	2006	ILCD	Europe
Glass-bottle (100% recycled)	Chemicals	Materials	0.55616763	kg	2008	CCaLC	Europe
Glass-bottle (35.5% recycled)	Chemicals	Materials	0.78758635	kg	2008	CCaLC	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Glass-bottle (85% recycled)	Chemicals	Materials	0.62052207	kg	2008	CCaLC	Europe
Glass-bottle (virgin)	Chemicals	Materials	0.91221968	kg	2008	CCaLC	Europe
Grit, recycled	Chemicals	Materials	0.22100000	kg	2010	Polyfloor	UK
Hard coal	Chemicals	Materials	0.30562550 9	kg	2002	ILCD	EU-27
Heavy Fuel Oil	Chemicals	Materials	0.34483254 1	kg	2003	ILCD	EU-15
Hydrogen (cracker)	Chemicals	Materials	1.72640759 3	kg	2004	PlasticsEurope	Europe
Hydrogen (electrolysis)	Chemicals	Materials	0.96693218	kg	2004	PlasticsEurope	Europe
Hydrogen (from Natural gas)	Chemicals	Materials	1.19564950	kg	2006	Mortimer, N., et al. (2009)	UK
Hydrogen (steam reforming from natural gas)	Chemicals	Materials	7.98155969 7	kg	2004	PlasticsEurope	Europe
Hydrogen chloride	Chemicals	Materials	1.48355689	kg	2004	PlasticsEurope	Europe
Hydrogen cyanide	Chemicals	Materials	7.31217640 3	kg	2004	PlasticsEurope	Europe
Hydrogen cyanide (prussic acid)	Chemicals	Materials	7.31E+00	kg	2004	PlasticsEurope	Europe
Kerosene	Chemicals	Materials	0.34363816 9	kg	2003	ILCD	EU-15
Kraft paper (label)	Chemicals	Materials	1.70021410	kg	2000	Ecoinvent	Europe
Light Fuel Oil	Chemicals	Materials	0.38718382 7	kg	2003	ILCD	EU-15
Lignite	Chemicals	Materials	0.03635424 8	kg	2002	ILCD	EU-27
Lime (burnt)	Chemicals	Materials	1.38	kg	2003	Nielsen et al, 2003.	Denmark
Lime (hydrated)	Chemicals	Materials	1.05	kg	2003	Nielsen et al, 2003.	Denmark
Liquefied natural gas (LNG)	Chemicals	Materials	0.01648	kg	2000	Probas	Germany
Liquid packaging board	Chemicals	Materials	0.61352098	kg	2000	Ecoinvent	Europe
Lubricant oil	Chemicals	Materials	0.54	kg	2003	Nielsen et al, 2003.	Denmark
Methyl methacrylate (MMA)	Chemicals	Materials	6.83333805 6	kg	2004	PlasticsEurope	Europe
Naphtha - 1	Chemicals	Materials	0.42464799 1	kg	2003	ILCD	EU-15
Naphtha - 2	Chemicals	Materials	0.36583280 8	kg	2004	PlasticsEurope	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Natural gas	Chemicals	Materials	0.002746	kg	2000	US LCI	EU
Natural gas (LNG)	Chemicals	Materials	0.46012836	kg	2002	ILCD	EU-27
Nickel reforming catalyst	Chemicals	Materials	2	kg	2008	Confidential	UK
Nitrogen	Chemicals	Materials	5.4	kg	2005	ILCD	EU-27
Nylon 6 granulate (PA 6)	Chemicals	Materials	0.08831976	kg	2004	PlasticsEurope	Europe
Octanol	Chemicals	Materials	3	kg	2006	Mortimer, N., et al. (2009)	UK
Oxygen	Chemicals	Materials	9.31543400	kg	2005	ILCD	EU-27
PE, 100% recycled (HDPE or LDPE)	Chemicals	Materials	4	kg	2009	CCaLC	UK
Pentane	Chemicals	Materials	0.910	kg	2004	PlasticsEurope	Europe
PET fibres	Chemicals	Materials	1.15131314	kg	2005	ILCD	EU-27
PET, 100% recycled	Chemicals	Materials	6	kg	2009	CCaLC	UK
Petrol	Chemicals	Materials	4.45698748	kg	2000	Probas	Germany
Phenol (hydroxy benzene)	Chemicals	Materials	0.947	kg	2004	PlasticsEurope	Europe
Pigment (TiO2)	Chemicals	Materials	0.004272	kg	2009	CCaLC, confidential	Europe
Polyacrylonitrile (PAN) fibres	Chemicals	Materials	2.27307715	kg	2005	ILCD	EU-27
Polyamide fibres	Chemicals	Materials	9	kg	2005	ILCD	EU-27
Polybutadiene granulate (PB)	Chemicals	Materials	4.16060700	kg	2004	PlasticsEurope	Europe
Polycarbonate granulate (PC)	Chemicals	Materials	5.70242269	kg	2004	PlasticsEurope	Europe
Polyethylene film (LDPE)	Chemicals	Materials	7	kg	2004	PlasticsEurope	Europe
Polyethylene high density granulate (HDPE)	Chemicals	Materials	5.70242269	kg	2004	PlasticsEurope	Europe
Polyethylene low density granulate (LDPE)	Chemicals	Materials	7	kg	2004	PlasticsEurope	Europe
Polyethylene pipe (HDPE)	Chemicals	Materials	4.03488537	kg	2004	PlasticsEurope	Europe
			7.79844542				
			7	kg	2004	PlasticsEurope	Europe
			2.44810655				
			7	kg	2004	PlasticsEurope	Europe
			1.98863398				
			3	kg	2004	PlasticsEurope	Europe
			2.16436929				
			4	kg	2004	PlasticsEurope	Europe
			2.55660978	kg	2004	PlasticsEurope	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
			5				
Polyethylene terephthalate granulate (PET, amorph)	Chemicals	Materials	3.40567965	kg	2004	PlasticsEurope	Europe
Polyethylene terephthalate granulate (PET, bottle grade)	Chemicals	Materials	3.53274781	kg	2004	PlasticsEurope	Europe
Polylactide, granulate	Chemicals	Materials	2.08000000	kg	2007	NatureWorks	USA
Polymethylmethacrylate sheet (PMMA)	Chemicals	Materials	8.53930864 2	kg	2004	PlasticsEurope	Europe
Polymethylmethacrylate-ball (PMMA)	Chemicals	Materials	7.27332923 3	kg	2004	PlasticsEurope	Europe
Polypropylene fibres	Chemicals	Materials	2.33369446	kg	2005	ILCD	EU-27
Polypropylene granulate (PP)	Chemicals	Materials	2.02301298 2	kg	2004	PlasticsEurope	Europe
Polystyrene - expandable granulate	Chemicals	Materials	3.38375834 7	kg	2003	ILCD	Europe
Polystyrene - general purpose	Chemicals	Materials	3.47725608	kg	2002	ILCD	Europe
Polystyrene granulate - high impact	Chemicals	Materials	3.46396771 3	kg	2002	ILCD	Europe
Polystyrene granulate (PS)	Chemicals	Materials	3.52049165 5	kg	2004	PlasticsEurope	Europe
Polyvinyl chloride sheet (PVC)	Chemicals	Materials	3.21900461 2	kg	2004	PlasticsEurope	Europe
Polyvinylchloride granulate (bulk, B-PVC)	Chemicals	Materials	1.60181359 6	kg	2004	PlasticsEurope	Europe
Polyvinylchloride granulate (Emulsion, E-PVC)	Chemicals	Materials	3.29E+00	kg	2004	PlasticsEurope	Europe
Polyvinylchloride granulate (Suspension, S-PVC)	Chemicals	Materials	1.89E+00	kg	2004	PlasticsEurope	Europe
Polyvinylchloride pipe (PVC)	Chemicals	Materials	3.27086936 9	kg	2004	PlasticsEurope	Europe
Potassium Hydroxide	Chemicals	Materials	1.98	kg	2009	Confidential	Global
Propene (propylene)	Chemicals	Materials	1.46396859 8	kg	2004	PlasticsEurope	Europe
Propene (Propylene, Pipeline)	Chemicals	Materials	1.62181607 7	kg	2004	PlasticsEurope	Europe
Propylene	Chemicals	Materials	1.31095313	kg	2005	ILCD	EU-27

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
PVC chips (jazz from recycling)	Chemicals	Materials	0.048421395	kg	2009	The University of Manchester	UK
PVC chips (white from recycling)	Chemicals	Materials	0.06083369	kg	2009	The University of Manchester	UK
PVC pellets (black from recycling)	Chemicals	Materials	0.190278513	kg	2009	The University of Manchester	UK
PVC pulver (jazz from recycling)	Chemicals	Materials	0.078867473	kg	2009	The University of Manchester	UK
PVC, recycled - 2mm granule	Chemicals	Materials	0.37450000	kg	2010	Polyfloor	UK
PVC, recycled - 6mm granule	Chemicals	Materials	0.22160000	kg	2010	Polyfloor	UK
Rapeseed oil	Chemicals	Materials	1.207	kg	2009	Confidential	Germany
Silica sand (flour)	Chemicals	Materials	0.311326746	kg	2005	ILCD	Germany
Sodium Chloride	Chemicals	Materials	2.01E-01	kg	2005	PlasticsEurope	Europe
Sodium hydroxide (100%; caustic soda)	Chemicals	Materials	1.424593288	kg	2004	PlasticsEurope	Europe
Sodium hydroxide (Caustic soda 49% conc.)	Chemicals	Materials	1.20406310	kg	2006	Mortimer, N., et al. (2009)	UK
Solvent-based white paint (0.75 l packaging)	Chemicals	Materials	3.54835547	kg	2009	Confidential	UK
Solvent-based white paint (2.5 l packaging)	Chemicals	Materials	3.54469967	kg	2009	Confidential	UK
Solvent-free white paint (10 l packaging)-1	Chemicals	Materials	1.63653147	kg	2009	Confidential	UK
Solvent-free white paint (10 l packaging)-2	Chemicals	Materials	1.68368850	kg	2009	Confidential	UK
Solvent-free white paint (2.5 l packaging)	Chemicals	Materials	1.73706402	kg	2009	Confidential	UK
Solvent-free white paint (2.5 l PP packaging)	Chemicals	Materials	4.20613180	litre	2008	Confidential	UK
Soya bean oil	Chemicals	Materials	5.89E-01	kg	2009	USLCI	USA
Styrene	Chemicals	Materials	3.139958676	kg	2004	PlasticsEurope	Europe
Sulphur	Chemicals	Materials	0.550277285	kg	2003	ILCD	EU-15
Sulphuric acid (93% conc.)	Chemicals	Materials	0.13680960	kg	2006	Mortimer, N., et al. (2009)	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Toluene (methyl benzene)	Chemicals	Materials	1.521953026	kg	2004	PlasticsEurope	Europe
Vinasses	Chemicals	Materials	0.63700000	kg	2006	Mortimer et al. (2009)	UK
Vinyl chloride (VCM; Chloroethane)	Chemicals	Materials	2.105323946	kg	2004	PlasticsEurope	Europe
Xylene (dimethyl benzene)	Chemicals	Materials	1.661019547	kg	2004	PlasticsEurope	Europe
Zinc stearate	Chemicals	Materials	1.646010557	kg	2009	The University of Manchester	UK
Carbon dioxide (CO2)	Chemicals related	& Materials	0.26486310	kg	2006	Mortimer, N., et al. (2009)	UK
Bio-diesel from rape-seed		Energy	0.05835	MJ	2010	HGCA	UK
Bio-ethanol from corn		Energy	0.0643	MJ	2010	HGCA	UK
Diesel (used in farm machinery)		Energy	0.07800000	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity - hydro		Energy	0.006774731	MJ	2002	ILCD	Europe
Electricity - wind		Energy	0.001832095	MJ	2002	ILCD	Europe
Electricity (high voltage) - AT grid		Energy	0.089969726	MJ	2002	ILCD	Austria
Electricity (high voltage) - BE grid		Energy	0.110190978	MJ	2002	ILCD	Belgium
Electricity (high voltage) - CH grid		Energy	0.022616745	MJ	2002	ILCD	Switzerland
Electricity (high voltage) - CZ grid		Energy	0.212463866	MJ	2002	ILCD	Czech Rep.
Electricity (high voltage) - DE grid		Energy	0.190541087	MJ	2002	ILCD	Germany
Electricity (high voltage) - DK grid		Energy	0.20981789	MJ	2002	ILCD	Denmark
Electricity (high voltage) - EE grid		Energy	0.386982391	MJ	2002	ILCD	Estonia
Electricity (high voltage) - ES grid		Energy	0.175528933	MJ	2002	ILCD	Spain
Electricity (high voltage) - FI grid		Energy	0.139126081	MJ	2002	ILCD	Finland
Electricity (high voltage) - FR grid		Energy	0.04046066	MJ	2002	ILCD	France

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Electricity (high voltage) - GR grid		Energy	1 0.30678289	MJ	2002	ILCD	Greece
Electricity (high voltage) - HU grid		Energy	0.17348230	MJ	2002	ILCD	Hungary
Electricity (high voltage) - IE grid		Energy	0.22769164	MJ	2002	ILCD	Ireland
Electricity (high voltage) - IS grid		Energy	0.00623	MJ	2002	ILCD	Iceland
Electricity (high voltage) - IT grid		Energy	0.18865790	MJ	2002	ILCD	Italy
Electricity (high voltage) - LT grid		Energy	0.04958975	MJ	2002	ILCD	Lithuania
Electricity (high voltage) - LU grid		Energy	0.16270529	MJ	2002	ILCD	Luxembourg
Electricity (high voltage) - LV grid		Energy	0.14358736	MJ	2002	ILCD	Latvia
Electricity (high voltage) - NL grid		Energy	0.19759421	MJ	2002	ILCD	Netherlands
Electricity (high voltage) - NO grid		Energy	0.00813593	MJ	2002	ILCD	Norway
Electricity (high voltage) - PO grid		Energy	0.30301135	MJ	2002	ILCD	Poland
Electricity (high voltage) - PT grid		Energy	0.21145434	MJ	2002	ILCD	Portugal
Electricity (high voltage) - SE grid		Energy	0.02932774	MJ	2002	ILCD	Sweden
Electricity (high voltage) - SI grid		Energy	0.16336230	MJ	2002	ILCD	Slovenia
Electricity (high voltage) - SK grid		Energy	0.09596439	MJ	2002	ILCD	Slovakia
Electricity (high voltage) - UK grid		Energy	0.17356639	MJ	2002	ILCD	UK
Electricity (high voltage) - European grid		Energy	0.15521099	MJ	2002	ILCD	EU-27
Electricity (imported)		Energy	0.13100000	MJ	2010	Confidential	UK
Electricity (low voltage) - BE grid		Energy	0.11262741	MJ	2002	ILCD	Belgium
Electricity (low voltage) - CH grid		Energy	0.02397800 8	MJ	2002	ILCD	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Electricity (low voltage) - DE grid		Energy	0.197309232	MJ	2002	ILCD	Germany
Electricity (low voltage) - DK grid		Energy	0.220815649	MJ	2002	ILCD	Denmark
Electricity (low voltage) - EE grid		Energy	0.445073519	MJ	2002	ILCD	Estonia
Electricity (low voltage) - ES grid		Energy	0.185035311	MJ	2002	ILCD	Spain
Electricity (low voltage) - FI grid		Energy	0.142323812	MJ	2002	ILCD	Finland
Electricity (low voltage) - FR grid		Energy	0.042182822	MJ	2002	ILCD	France
Electricity (low voltage) - GR grid		Energy	0.323729662	MJ	2002	ILCD	Greece
Electricity (low voltage) - HU grid		Energy	0.187703132	MJ	2002	ILCD	Hungary
Electricity (low voltage) - IS grid		Energy	0.006456191	MJ	2002	ILCD	Iceland
Electricity (low voltage) - IT grid		Energy	0.196038649	MJ	2002	ILCD	Italy
Electricity (low voltage) - LT grid		Energy	0.055889317	MJ	2002	ILCD	Lithuania
Electricity (low voltage) - LU grid		Energy	0.16750744	MJ	2002	ILCD	Luxembourg
Electricity (low voltage) - LV grid		Energy	0.162224805	MJ	2002	ILCD	Latvia
Electricity (low voltage) - NL grid		Energy	0.204157224	MJ	2002	ILCD	Netherlands
Electricity (low voltage) - NO grid		Energy	7.79797E-05	MJ	2002	ILCD	Norway
Electricity (low voltage) - PL grid		Energy	0.329944801	MJ	2002	ILCD	Poland
Electricity (low voltage) - PT grid		Energy	0.222917715	MJ	2002	ILCD	Portugal
Electricity (low voltage) - SE grid		Energy	0.031120005	MJ	2002	ILCD	Sweden
Electricity (low voltage) - SI grid		Energy	0.16968315	MJ	2002	ILCD	Slovenia

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Electricity (low voltage) - SK grid		Energy	0.099351282	MJ	2002	ILCD	Slovakia
Electricity (low voltage) - UCTE		Energy	0.163955126	MJ	2002	ILCD	UCTE
Electricity (low voltage) - UK grid		Energy	0.18585367	MJ	2002	ILCD	UK
Electricity (low voltage) - AT grid		Energy	0.092925432	MJ	2002	ILCD	Austria
Electricity (low voltage) - CZ grid		Energy	0.224938758	MJ	2002	ILCD	Czech Rep.
Electricity-CHP-1		Energy	0.10786300	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity-CHP-10		Energy	0.11502100	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity-CHP-2		Energy	0.12213955	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity-CHP-3		Energy	0.09326000	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity-CHP-4		Energy	0.09326	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity-CHP-5		Energy	0.069558	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity-CHP-6		Energy	0.118266	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity-CHP-7		Energy	0.118712	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity-CHP-8		Energy	0.11440100	MJ	2006	Mortimer, N., et al. (2009)	UK
Electricity-CHP-9		Energy	0.11171300	MJ	2006	Mortimer, N., et al. (2009)	UK
Heat - residential, light fuel oil		Energy	0.094663894	MJ	2002	ILCD	EU-27
Heat - residential, natural gas		Energy	0.068428581	MJ	2002	ILCD	EU-27
Heat - residential, wood pellets		Energy	0.150889889	MJ	2002	ILCD	EU-27
Heat-CHP-1		Energy	0.05393100	MJ	2006	Mortimer, N., et al. (2009)	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
						(2009)	
Heat-CHP-10		Energy	0.05751100	MJ	2006	Mortimer, N., et al. (2009)	UK
Heat-CHP-2		Energy	0.06107000	MJ	2006	Mortimer, N., et al. (2009)	UK
Heat-CHP-3		Energy	0.04665600	MJ	2006	Mortimer, N., et al. (2009)	UK
Heat-CHP-4		Energy	0.04665600	MJ	2006	Mortimer, N., et al. (2009)	UK
Heat-CHP-5		Energy	0.034744	MJ	2006	Mortimer, N., et al. (2009)	UK
Heat-CHP-6		Energy	0.059157	MJ	2006	Mortimer, N., et al. (2009)	UK
Heat-CHP-7		Energy	0.059356	MJ	2006	Mortimer, N., et al. (2009)	UK
Heat-CHP-8		Energy	0.05720000	MJ	2006	Mortimer, N., et al. (2009)	UK
Heat-CHP-9		Energy	0.05585900	MJ	2006	Mortimer, N., et al. (2009)	UK
Steam - heavy fuel oil		Energy	0.09860651	MJ	2002	ILCD	EU-27
Steam - heavy fuel oil, AT		Energy	0.10379078 7	MJ	2002	ILCD	Austria
Steam - heavy fuel oil, BE		Energy	0.09646824 5	MJ	2002	ILCD	Belgium
Steam - heavy fuel oil, BG		Energy	0.09750538 3	MJ	2002	ILCD	Bulgaria
Steam - heavy fuel oil, CH		Energy	0.10712611 3	MJ	2002	ILCD	Switzerland
Steam - heavy fuel oil, CZ		Energy	0.10052040 8	MJ	2002	ILCD	Czech Rep.
Steam - heavy fuel oil, DE		Energy	0.10043822 4	MJ	2002	ILCD	Germany
Steam - heavy fuel oil, DK		Energy	0.09735389	MJ	2002	ILCD	Denmark
Steam - heavy fuel oil, EE		Energy	0.10044541 6	MJ	2002	ILCD	Estonia
Steam - heavy fuel oil, ES		Energy	0.10335507 4	MJ	2002	ILCD	Spain

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Steam - heavy fuel oil, FI		Energy	0.098307817	MJ	2002	ILCD	Finland
Steam - heavy fuel oil, FR		Energy	0.098566521	MJ	2002	ILCD	France
Steam - heavy fuel oil, GR		Energy	0.099799941	MJ	2002	ILCD	Greece
Steam - heavy fuel oil, HU		Energy	0.09987564	MJ	2002	ILCD	Hungary
Steam - heavy fuel oil, IE		Energy	0.094183898	MJ	2002	ILCD	Ireland
Steam - heavy fuel oil, IT		Energy	0.100813481	MJ	2002	ILCD	Italy
Steam - heavy fuel oil, LT		Energy	0.099887398	MJ	2002	ILCD	Lithuania
Steam - heavy fuel oil, LV		Energy	0.099887396	MJ	2002	ILCD	Latvia
Steam - heavy fuel oil, NL		Energy	0.097289353	MJ	2002	ILCD	Netherlands
Steam - heavy fuel oil, NO		Energy	0.093758523	MJ	2002	ILCD	Norway
Steam - heavy fuel oil, PO		Energy	0.100451303	MJ	2002	ILCD	Poland
Steam - heavy fuel oil, PT		Energy	0.103012425	MJ	2002	ILCD	Portugal
Steam - heavy fuel oil, RO		Energy	0.097573174	MJ	2002	ILCD	Romania
Steam - heavy fuel oil, SE		Energy	0.096308168	MJ	2002	ILCD	Sweden
Steam - heavy fuel oil, SI		Energy	0.098433618	MJ	2002	ILCD	Slovenia
Steam - heavy fuel oil, SK		Energy	0.100064426	MJ	2002	ILCD	Slovakia
Steam - heavy fuel oil, UK		Energy	0.094937684	MJ	2002	ILCD	GB
Steam - light fuel oil		Energy	0.092831144	MJ	2002	ILCD	EU-27
Steam - light fuel oil, AT		Energy	0.093417093	MJ	2002	ILCD	Austria

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Steam - light fuel oil, BE		Energy	0.093046967	MJ	2002	ILCD	Belgium
Steam - light fuel oil, BG		Energy	0.092973009	MJ	2002	ILCD	Bulgaria
Steam - light fuel oil, CH		Energy	0.093357802	MJ	2002	ILCD	Switzerland
Steam - light fuel oil, CZ		Energy	0.092944609	MJ	2002	ILCD	Czech Rep.
Steam - light fuel oil, DE		Energy	0.093454323	MJ	2002	ILCD	Germany
Steam - light fuel oil, DK		Energy	0.093306711	MJ	2002	ILCD	Denmark
Steam - light fuel oil, EE		Energy	0.092948617	MJ	2002	ILCD	Estonia
Steam - light fuel oil, ES		Energy	0.098519542	MJ	2002	ILCD	Spain
Steam - light fuel oil, FI		Energy	0.093551976	MJ	2002	ILCD	Finland
Steam - light fuel oil, FR		Energy	0.093397873	MJ	2002	ILCD	France
Steam - light fuel oil, HU		Energy	0.093005127	MJ	2002	ILCD	Hungary
Steam - light fuel oil, IE		Energy	0.092990411	MJ	2002	ILCD	Ireland
Steam - light fuel oil, IT		Energy	0.093678297	MJ	2002	ILCD	Italy
Steam - light fuel oil, LT		Energy	0.0930314	MJ	2002	ILCD	Lithuania
Steam - light fuel oil, LV		Energy	0.093031398	MJ	2002	ILCD	Latvia
Steam - light fuel oil, NL		Energy	0.092307356	MJ	2002	ILCD	Netherlands
Steam - light fuel oil, NO		Energy	0.087601371	MJ	2002	ILCD	Norway
Steam - light fuel oil, PO		Energy	0.093069255	MJ	2002	ILCD	Poland
Steam - light fuel oil, PT		Energy	0.09903926	MJ	2002	ILCD	Portugal
Steam - light fuel oil, RO		Energy	0.09306156	MJ	2002	ILCD	Romania

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Steam - light fuel oil, SE		Energy	0.09038594	MJ	2002	ILCD	Sweden
Steam - light fuel oil, SI		Energy	0.09305668	MJ	2002	ILCD	Slovenia
Steam - light fuel oil, SK		Energy	0.09299195	MJ	2002	ILCD	Slovakia
Steam - light fuel oil, UK		Energy	0.09051565	MJ	2002	ILCD	GB
Steam - natural gas		Energy	0.07246044	MJ	2002	ILCD	EU-27
Steam - natural gas, AT		Energy	0.07622388	MJ	2002	ILCD	Austria
Steam - natural gas, BE		Energy	0.07040306	MJ	2002	ILCD	Belgium
Steam - natural gas, BG		Energy	0.07439308	MJ	2002	ILCD	Bulgaria
Steam - natural gas, CH		Energy	0.06925453	MJ	2002	ILCD	Switzerland
Steam - natural gas, CZ		Energy	0.07908639	MJ	2002	ILCD	Czech Rep.
Steam - natural gas, DE		Energy	0.07175435	MJ	2002	ILCD	Germany
Steam - natural gas, DK		Energy	0.06856234	MJ	2002	ILCD	Denmark
Steam - natural gas, EE		Energy	0.07771216	MJ	2002	ILCD	Estonia
Steam - natural gas, ES		Energy	0.08237014	MJ	2002	ILCD	Spain
Steam - natural gas, FI		Energy	0.07745291	MJ	2002	ILCD	Finland
Steam - natural gas, FR		Energy	0.07681249	MJ	2002	ILCD	France
Steam - natural gas, GR		Energy	0.07836253	MJ	2002	ILCD	Greece
Steam - natural gas, HU		Energy	0.07823031	MJ	2002	ILCD	Hungary
Steam - natural gas, IE		Energy	0.06838345	MJ	2002	ILCD	Ireland
Steam - natural gas, IT		Energy	0.07974463	MJ	2002	ILCD	Italy

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Steam - natural gas, LT		Energy	0.07772573	MJ	2002	ILCD	Lithuania
Steam - natural gas, LU		Energy	0.06469196	MJ	2002	ILCD	Luxembourg
Steam - natural gas, LV		Energy	0.07772577	MJ	2002	ILCD	Latvia
Steam - natural gas, NL		Energy	0.06552279	MJ	2002	ILCD	Netherlands
Steam - natural gas, NO		Energy	0.06603823	MJ	2002	ILCD	Norway
Steam - natural gas, PO		Energy	0.07302199	MJ	2002	ILCD	Poland
Steam - natural gas, PT		Energy	0.08198232	MJ	2002	ILCD	Portugal
Steam - natural gas, RO		Energy	0.06979439	MJ	2002	ILCD	Romania
Steam - natural gas, SE		Energy	0.06916314	MJ	2002	ILCD	Sweden
Steam - natural gas, SI		Energy	0.07810465	MJ	2002	ILCD	Slovenia
Steam - natural gas, SK		Energy	0.08142077	MJ	2002	ILCD	Slovakia
Steam - natural gas, UK		Energy	0.06780042	MJ	2002	ILCD	GB
Aluminium (rolled, 48% recycled)	Metals	Materials	5.94032682	kg	2009	CCaLC, EAA	Europe
Aluminium (rolled, virgin)	Metals	Materials	10.4675853	kg	2009	CCaLC, EAA	Europe
Aluminium extrusion	Metals	Materials	2.45207657	kg	2005	ILCD	Europe
Aluminium foil (from 48% recycled Al.)	Metals	Materials	6.64E+00	kg	2008	European Aluminium Association	Europe
Aluminium foil (from virgin Al.)	Metals	Materials	1.12E+01	kg	2008	European Aluminium Association	Europe
Aluminium ingot (100% recycled, new scrap)	Metals	Materials	0.31680500	kg	2008	European Aluminium Association	Europe
Aluminium ingot (100% recycled, old	Metals	Materials	0.52263800	kg	2008	European Aluminium	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
scrap)						Association	
Aluminium ingot (virgin)	Metals	Materials	9.85151000	kg	2008	European Aluminium Association	Europe
Aluminium sheet	Metals	Materials	3.22971863 2	kg	2005	ILCD	Europe
Copper sheet	Metals	Materials	0.97746254	kg	2000	ILCD	EU-15
Copper tube	Metals	Materials	0.98336075 7	kg	2000	ILCD	EU-15
Copper wire	Metals	Materials	0.79042206 7	kg	2000	ILCD	EU-15
Lead	Metals	Materials	1.78269435 9	kg	2002	ILCD	Germany
Stainless steel - hot rolled coil	Metals	Materials	3.22971863 2	kg	1997	ILCD	Europe
Steel - hot rolled coil	Metals	Materials	0.93136606 8	kg	2000	ILCD	Europe
Steel - hot rolled section	Metals	Materials	1.13201024 9	kg	2000	ILCD	Global
Steel rebar	Metals	Materials	1.02847909	kg	2000	ILCD	Global
Tin plate (100% recycled)	Metals	Materials	1.06E+00	kg	2009	CORUS group	Europe
Tin plate (25% recycled)	Metals	Materials	2.29E+00	kg	2009	CORUS group	Europe
Tin plate (61.7% recycled)	Metals	Materials	1.68E+00	kg	2009	CORUS group	Europe
Tin plate (virgin)	Metals	Materials	2.70E+00	kg	2009	CORUS group	Europe
Tin plate (Spain)	Metals	Materials	45.3600000 0	kg	2004, 2007	Classen et al (2007) and Spriensma (2004)	Spain
Zinc - high grade	Metals	Materials	3.19579844 6	kg	2005	ILCD	Global
Deionised water - from ground water	Water	Materials	0.00852256	kg	2005	ILCD	Europe
Deionised water - from surface water	Water	Materials	0.00852256	kg	2005	ILCD	Europe
Drinking water - from ground water	Water	Materials	0.00057692 8	kg	2005	ILCD	Europe
Drinking water - from surface water	Water	Materials	0.00062622 7	kg	2005	ILCD	Europe
Process water - from ground water	Water	Materials	0.00651477 6	kg	2005	ILCD	Europe
Process water - from surface water	Water	Materials	0.00651477	kg	2005	ILCD	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Wood - pine log	Wood	Materials	0.006731576	kg	2005	ILCD	Germany
Wood - pine timber	Wood	Materials	0.025076719	kg	2005	ILCD	Germany
Wood - spruce log	Wood	Materials	0.007073616	kg	2005	ILCD	Germany
Wood - spruce timber	Wood	Materials	0.026785234	kg	2005	ILCD	Germany
Beer can (Aluminium, 0.4 l, 100%V, 100%L)	Drinks	Packaging	11.104358466	kg	2009	CCaLC	UK
Beer can (Aluminium, 0.4 l, 42%R, 52%L)	Drinks	Packaging	7.024507179	kg	2009	CCaLC	UK
Beer can (Aluminium, 0.4 l, 48%R, 52%L)	Drinks	Packaging	6.441671282	kg	2009	CCaLC	UK
Beer can (Aluminium, 0.5 l, 100%V, 100%L)	Drinks	Packaging	11.014984266	kg	2009	CCaLC	UK
Beer can (Aluminium, 0.5 l, 42%R, 52%L)	Drinks	Packaging	6.968510549	kg	2009	CCaLC	UK
Beer can (Aluminium, 0.5 l, 48%R, 52%L)	Drinks	Packaging	6.390442877	kg	2009	CCaLC	UK
Beer bottle (Brown glass, 0.5 l, 100%V, 100%L)	Drinks	Packaging	0.968894758	kg	2009	CCaLC	UK
Beer bottle (Brown glass, 0.5 l, 35.5%R, 64.5%L)	Drinks	Packaging	0.840462327	kg	2009	CCaLC	UK
Beer bottle (Green glass, 0.275 l, 100%V, 100%L)	Drinks	Packaging	0.987215303	kg	2009	CCaLC	UK
Beer bottle (Green glass, 0.275 l, 85%R, 15%L)	Drinks	Packaging	0.687490781	kg	2009	CCaLC	UK
Beer bottle (Green glass, 0.5 l, 100%V, 100%L)	Drinks	Packaging	0.979154341	kg	2009	CCaLC	UK
Beer bottle (Green glass, 0.5 l, 85%R, 15%L)	Drinks	Packaging	0.678019348	kg	2009	CCaLC	UK
Beer bottle (Green glass, 0.66 l, 100%V, 100%L)	Drinks	Packaging	0.968584538	kg	2009	CCaLC	UK
Beer bottle (Green glass, 0.66 l,	Drinks	Packaging	0.66765475	kg	2009	CCaLC	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
85%R, 15%L)			9				
Beer can (Steel, 0.5 l, 100%V, 100%L)	Drinks	Packaging	3.850086606	kg	2009	CCaLC	UK
Beer can (Steel, 0.5 l, 25%R body, 48%R top, 75%L)	Drinks	Packaging	3.046319533	kg	2009	CCaLC	UK
Beer can (Steel, 0.5 l, 61.7%R body, 48%R top, 38.3%L)	Drinks	Packaging	2.443257931	kg	2009	CCaLC	UK
Cider bottle (PET, 2 l, 100%V, 100%L)	Drinks	Packaging	4.511058189	kg	2009	CCaLC	UK
Cider bottle (PET, 2 l, 100%V, 91% L, 9%I)	Drinks	Packaging	4.684083997	kg	2009	CCaLC	UK
Cider bottle (PET, 2 l, 100%V, 91% L, 9%IER)	Drinks	Packaging	4.625235839	kg	2009	CCaLC	UK
Fizzy drink can (Aluminium, 0.33 l, 100%V, 100%L)	Drinks	Packaging	11.00246078	kg	2009	CCaLC	UK
Fizzy drink can (Aluminium, 0.33 l, 42%R, 58%L)	Drinks	Packaging	6.955987074	kg	2009	CCaLC	UK
Fizzy drink can (Aluminium, 0.33 l, 48%R, 52%L)	Drinks	Packaging	6.377919402	kg	2009	CCaLC	UK
Fizzy drink bottle (Brown glass, 0.33 l, 100%V, 100%L)	Drinks	Packaging	0.999086481	kg	2009	CCaLC	UK
Fizzy drink bottle (Brown glass, 0.33 l, 35.5%R, 64.5%L)	Drinks	Packaging	0.871392347	kg	2009	CCaLC	UK
Fizzy drink bottle (PET, 0.38 l, 100%V, 100%L)	Drinks	Packaging	4.499053358	kg	2009	CCaLC	UK
Fizzy drink bottle (PET, 0.38 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.693222379	kg	2009	CCaLC	UK
Fizzy drink bottle (PET, 0.38 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.625322266	kg	2009	CCaLC	UK
Fizzy drink bottle1 (PET, 0.5 l, 100%V, 100L)	Drinks	Packaging	4.603373795	kg	2009	CCaLC	UK
Fizzy drink bottle1 (PET, 0.5 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.793260433	kg	2009	CCaLC	UK
Fizzy drink bottle1 (PET, 0.5 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.729321081	kg	2009	CCaLC	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Fizzy drink bottle1 (PET, 0.5 l, 15%R, 85%L)	Drinks	Packaging	4.293053776	kg	2009	CCaLC	UK
Fizzy drink bottle2 (PET, 0.5 l, 100%R)	Drinks	Packaging	2.525059026	kg	2009	CCaLC	UK
Fizzy drink bottle2 (PET, 0.5 l, 100%V, 100L)	Drinks	Packaging	4.559761147	kg	2009	CCaLC	UK
Fizzy drink bottle2 (PET, 0.5 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.750316144	kg	2009	CCaLC	UK
Fizzy drink bottle2 (PET, 0.5 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.685459768	kg	2009	CCaLC	UK
Fizzy drink bottle2 (PET, 0.5 l, 15%R, 85%L)	Drinks	Packaging	4.254554094	kg	2009	CCaLC	UK
Fizzy drink bottle2 (PET, 0.5 l, 40%R, 60%L)	Drinks	Packaging	3.745878564	kg	2009	CCaLC	UK
Fizzy drink bottle2 (PET, 0.5 l, 60%R, 40%L)	Drinks	Packaging	3.338941609	kg	2009	CCaLC	UK
Fizzy drink bottle3 (PET, 0.5 l, 100%V, 100L)	Drinks	Packaging	4.478488407	kg	2009	CCaLC	UK
Fizzy drink bottle3 (PET, 0.5 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.674277434	kg	2009	CCaLC	UK
Fizzy drink bottle3 (PET, 0.5 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.604621979	kg	2009	CCaLC	UK
Fizzy drink bottle (PET, 2 l, 100%V, 100%L)	Drinks	Packaging	4.675222967	kg	2009	CCaLC	UK
Fizzy drink bottle (PET, 2 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.863084347	kg	2009	CCaLC	UK
Fizzy drink bottle (PET, 2 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.800812089	kg	2009	CCaLC	UK
Fizzy drink can1 (Steel, 0.33 l, 100%V, 100%L)	Drinks	Packaging	4.115977134	kg	2009	CCaLC	UK
Fizzy drink can1 (Steel, 0.33 l, 25%R body, 48%R top, 75%L)	Drinks	Packaging	3.16723838	kg	2009	CCaLC	UK
Fizzy drink can1 (Steel, 0.33 l, 61.7%R body, 48%R top, 75%L)	Drinks	Packaging	2.586422069	kg	2009	CCaLC	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Fizzy drink can2 (Steel, 0.33 l, 100%V, 100%L)	Drinks	Packaging	4.109570713	kg	2009	CCaLC	UK
Fizzy drink can2 (Steel, 0.33 l, 25%R body, 48%R top, 75%L)	Drinks	Packaging	3.160868458	kg	2009	CCaLC	UK
Fizzy drink can2 (Steel, 0.33 l, 61.7%R body, 48%R top, 75%L)	Drinks	Packaging	2.579993196	kg	2009	CCaLC	UK
Glass bottle - 1 re-use	Drinks	Packaging	0.671158275	kg	2009	CCaLC	UK
Glass bottle - 10 re-uses	Drinks	Packaging	0.187786919	kg	2009	CCaLC	UK
Glass bottle - 11 re-uses	Drinks	Packaging	0.181805945	kg	2009	CCaLC	UK
Glass bottle - 2 re-uses	Drinks	Packaging	0.399295913	kg	2009	CCaLC	UK
Glass bottle - 3 re-uses	Drinks	Packaging	0.313387375	kg	2009	CCaLC	UK
Glass bottle - 4 re-uses	Drinks	Packaging	0.308493851	kg	2009	CCaLC	UK
Glass bottle - 5 re-uses	Drinks	Packaging	0.263364683	kg	2009	CCaLC	UK
Glass bottle - 6 re-uses	Drinks	Packaging	0.236178437	kg	2009	CCaLC	UK
Glass bottle - 7 re-uses	Drinks	Packaging	0.218235514	kg	2009	CCaLC	UK
Glass bottle - 8 re-uses	Drinks	Packaging	0.205186116	kg	2009	CCaLC	UK
Glass bottle - 9 re-uses	Drinks	Packaging	0.195399068	kg	2009	CCaLC	UK
Juice bottle (Green glass, 0.75 l, 100%V, 100%L)	Drinks	Packaging	0.971914298	kg	2009	CCaLC	UK
Juice bottle (PET, 0.33 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.75169769	kg	2009	CCaLC	UK
Juice bottle (PET, 0.33 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.686648218	kg	2009	CCaLC	UK
Juice bottle (PET, 0.33 l, 100%V,100%L)	Drinks	Packaging	4.560585426	kg	2009	CCaLC	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Juice bottle (White glass, 0.275 l, 100%V, 100%L)	Drinks	Packaging	0.991546621	kg	2009	CCaLC	UK
Juice bottle (White glass, 0.275 l, 35.5%R, 64.5%L)	Drinks	Packaging	0.864001357	kg	2009	CCaLC	UK
Juice bottle (White glass, 0.375 l, 100%V, 100%L)	Drinks	Packaging	1.025552082	kg	2009	CCaLC	UK
Juice bottle (White glass, 0.375 l, 35.5%R, 64.5%L)	Drinks	Packaging	0.897571651	kg	2009	CCaLC	UK
Juice bottle (Green glass, 0.75 l, 85%R, 15%L)	Drinks	Packaging	0.66932109	kg	2009	CCaLC	UK
Juice carton (0.25 l, 100%V, 100%I)	Drinks	Packaging	2.51662735	kg	2009	CCaLC	UK
Juice carton (0.25 l, 100%V, 100%L)	Drinks	Packaging	1.879044234	kg	2009	CCaLC	UK
Juice carton (0.25 l, 100%V, 50%L, 50%I)	Drinks	Packaging	2.178761419	kg	2009	CCaLC	UK
Juice carton (0.25 l, 100%V, 91%L, 9%I)	Drinks	Packaging	1.936426686	kg	2009	CCaLC	UK
Juice carton (0.25 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	1.882305476	kg	2009	CCaLC	UK
Juice carton (1 l, 100%V, 50%L, 50%I)	Drinks	Packaging	2.288532862	kg	2009	CCaLC	UK
Juice carton (1 l, 100%V, 100%I)	Drinks	Packaging	2.735221492	kg	2009	CCaLC	UK
Juice carton (1 l, 100%V, 100%L)	Drinks	Packaging	1.991270782	kg	2009	CCaLC	UK
Juice carton (1 l, 100%V, 91%L, 9%I)	Drinks	Packaging	2.047774912	kg	2009	CCaLC	UK
Juice carton (1 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	1.991581759	kg	2009	CCaLC	UK
Milk bottle (HDPE, 0.568 l, 100%V, 100%L)	Drinks	Packaging	3.837525241	kg	2009	CCaLC	UK
Milk bottle (HDPE, 0.568 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.084455131	kg	2009	CCaLC	UK
Milk bottle (HDPE, 0.568 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	3.964783612	kg	2009	CCaLC	UK
Milk bottle (HDPE, 0.568 l, 30%V,	Drinks	Packaging	3.45565141	kg	2009	CCaLC	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
70%L)			3				
Milk bottle (HDPE, 1.136 l, 100%V, 100%L)	Drinks	Packaging	3.868590231	kg	2009	CCaLC	UK
Milk bottle (HDPE, 1.136 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.115478092	kg	2009	CCaLC	UK
Milk bottle (HDPE, 1.136 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	3.995807521	kg	2009	CCaLC	UK
Milk bottle (HDPE, 1.136 l, 30%V, 70%L)	Drinks	Packaging	3.475327223	kg	2009	CCaLC	UK
Milk bottle (HDPE, 2.272 l, 100%V, 100%L)	Drinks	Packaging	3.885094762	kg	2009	CCaLC	UK
Milk bottle (HDPE, 2.272 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.131963552	kg	2009	CCaLC	UK
Milk bottle (HDPE, 2.272 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.01228914	kg	2009	CCaLC	UK
Milk bottle (HDPE, 2.272 l, 30%R, 70%L)	Drinks	Packaging	3.485330788	kg	2009	CCaLC	UK
Milk bottle (White glass, 0.568 l, 100%V, 100%L)	Drinks	Packaging	0.974286658	kg	2009	CCaLC	UK
Milk bottle (White glass, 0.568 l, 35.5%R, 64.5%L)	Drinks	Packaging	0.844742987	kg	2009	CCaLC	UK
Milk bottle (White glass, 0.568 l, 35.5%R, 64.5%L, r13)	Drinks	Packaging	0.374928624	kg	2009	CCaLC	UK
Milk bottle (White glass, 0.568 l, 35.5%R, 64.5%L, r20)	Drinks	Packaging	0.358148938	kg	2009	CCaLC	UK
Milk bottle (White glass, 0.568 l, 35.5%R, 64.5%L, r24)	Drinks	Packaging	0.352955965	kg	2009	CCaLC	UK
Milk bottle (White glass, 0.568 l, 35.5%R, 64.5%L, r30)	Drinks	Packaging	0.347760941	kg	2009	CCaLC	UK
Milk bottle (White glass, 0.568 l, 35.5%R, 64.5%L, r5)	Drinks	Packaging	0.451633882	kg	2009	CCaLC	UK
Milk carton (1 l, 100%V, 100%I)	Drinks	Packaging	2.772296943	kg	2009	CCaLC	UK
Milk carton (1 l, 100%V, 100%L)	Drinks	Packaging	2.008467742	kg	2009	CCaLC	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Milk carton (1 l, 100%V, 50%L, 50%I)	Drinks	Packaging	2.283091965	kg	2009	CCaLC	UK
Milk carton (1 l, 100%V, 91%L, 9%I)	Drinks	Packaging	2.077212071	kg	2009	CCaLC	UK
Milk carton (1 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	2.019294527	kg	2009	CCaLC	UK
Tetra-pak (Tetra brik asceptic, 1000ml, no-opening,weight 27 g)	Drinks	Packaging	1.85	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik asceptic, 1000ml, plastic cap,weight 27 g)	Drinks	Packaging	2.11	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik asceptic, 200ml, no-opening,weight 8 g)	Drinks	Packaging	2.13	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik asceptic, 500ml, no-opening,weight 17 g)	Drinks	Packaging	1.76	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, base, 1000ml, no-opening,weight 25 g)	Drinks	Packaging	1.08	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, base, 1000ml, ring pull opening,weight 26 g)	Drinks	Packaging	1.19	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, base, 200ml, no-opening,weight 8 g)	Drinks	Packaging	1.00	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, base, 300ml, no-opening,weight 11 g)	Drinks	Packaging	1.09	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, base, 500ml, no-opening,weight 14 g)	Drinks	Packaging	1.14	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, edge, 1000ml, twist-opening,weight 30 g)	Drinks	Packaging	1.23	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, slim, 200ml, straw-opening,weight 8 g)	Drinks	Packaging	1.13	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, square, 1000ml, no-opening,weight 29 g)	Drinks	Packaging	1.07	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, square, 1000ml, ring pull opening,weight 30 g)	Drinks	Packaging	1.17	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, square, 1000ml, twist-opening,weight 32 g)	Drinks	Packaging	1.19	kg	2010	Tetra-pak	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Tetra-pak (Tetra brik, square, 500ml, no-opening,weight 18 g)	Drinks	Packaging	1.06	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, square, 500ml, ring pull opening,weight 19 g)	Drinks	Packaging	1.26	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra brik, square, 500ml, twist-opening,weight 20 g)	Drinks	Packaging	1.30	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra top (juice), 1000ml, plastic cap,weight 23 g)	Drinks	Packaging	1.78	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra top (juice), 250ml, plastic top,weight 15 g)	Drinks	Packaging	1.87	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra top (juice), 250ml, ring-pull,weight 14 g)	Drinks	Packaging	1.64	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra top (juice), 500ml, plastic top,weight 22 g)	Drinks	Packaging	1.64	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra top (milk), 1000ml, plastic cap,weight 31 g)	Drinks	Packaging	1.52	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra top (milk), 250ml, plastic top,weight 16 g)	Drinks	Packaging	1.75	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra top (milk), 250ml, ring-pull,weight 14 g)	Drinks	Packaging	1.64	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra top (milk), 500ml, plastic top,weight 21 g)	Drinks	Packaging	1.67	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra-rex, 1000ml, easy-open,weight 31 g)	Drinks	Packaging	1.00	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra-rex, 1000ml, twist-opening,weight 35 g)	Drinks	Packaging	1.20	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra-rex, 250ml, easy-open,weight 16 g)	Drinks	Packaging	1.00	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra-rex, 500ml, easy-open,weight 18 g)	Drinks	Packaging	1.06	kg	2010	Tetra-pak	Global
Tetra-pak (Tetra-rex, 500ml, twist-opening,weight 22 g)	Drinks	Packaging	1.32	kg	2010	Tetra-pak	Global
Water bottle (Green glass, 0.75 l, 100%V, 100%L)	Drinks	Packaging	0.98	kg	2009	CCaLC	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Water bottle (Green glass, 0.75 l, 85%V, 15%L)	Drinks	Packaging	0.68	kg	2009	CCaLC	UK
Water bottle (PET, 0.5 l, 100%V, 9%L, 9%I)	Drinks	Packaging	4.82	kg	2009	CCaLC	UK
Water bottle (PET, 0.5 l, 100%V, 9%L, 9%IER)	Drinks	Packaging	4.76	kg	2009	CCaLC	UK
Water bottle (PET, 2 l, 100%V, 100%L)	Drinks	Packaging	4.56	kg	2009	CCaLC	UK
Water bottle (PET, 0.5 l, 100%V,100%L)	Drinks	Packaging	4.63	kg	2009	CCaLC	UK
Water bottle (PET, 1 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.80	kg	2009	CCaLC	UK
Water bottle (PET, 1 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.73	kg	2009	CCaLC	UK
Water bottle (PET, 1 l, 100%V, 100%L)	Drinks	Packaging	4.61	kg	2009	CCaLC	UK
Water bottle (PET, 2 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.74	kg	2009	CCaLC	UK
Water bottle (PET, 2 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.68	kg	2009	CCaLC	UK
Water bottle1 (PET, 1.5 l, 100%V, 100%L)	Drinks	Packaging	4.68	kg	2009	CCaLC	UK
Water bottle1 (PET, 1.5 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.87	kg	2009	CCaLC	UK
Water bottle1 (PET, 1.5 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.81	kg	2009	CCaLC	UK
Water bottle2 (PET, 1.5 l, 100%V, 100%L)	Drinks	Packaging	4.58	kg	2009	CCaLC	UK
Water bottle2 (PET, 1.5 l, 100%V, 91%L, 9%I)	Drinks	Packaging	4.76	kg	2009	CCaLC	UK
Water bottle2 (PET, 1.5 l, 100%V, 91%L, 9%IER)	Drinks	Packaging	4.70	kg	2009	CCaLC	UK
Wine bottle (Green glass, 0.187 l, 100%V, 100%L)	Drinks	Packaging	1.09	kg	2009	CCaLC	UK
Wine bottle (Green glass, 0.187 l, 85%R, 15%L)	Drinks	Packaging	0.80	kg	2009	CCaLC	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Wine bottle1 (Green glass, 0.75 l, 100%V, 100%L)	Drinks	Packaging	0.95	kg	2009	CCaLC	UK
Wine bottle1 (Green glass, 0.75 l, 85%R, 15%L)	Drinks	Packaging	0.65	kg	2009	CCaLC	UK
Wine bottle2 (Green glass, 0.75 l, 100%V, 100%L)	Drinks	Packaging	0.99	kg	2009	CCaLC	UK
Wine bottle2 (Green glass, 0.75 l, 85%R, 15%L)	Drinks	Packaging	0.69	kg	2009	CCaLC	UK
Aluminium can (0.33 l)	Drinks	Packaging	6.79	kg	2009	Confidential	UK
Coffe-cup lids - polylactic acid	Drinks	Packaging	2.89	kg	2009	Confidential	UK
Coffe-cup lids - polystyrene	Drinks	Packaging	1.74	kg	2009	Confidential	UK
Coffe-cup lids - recycled PET	Drinks	Packaging	1.33	kg	2009	Confidential	UK
Corrugated board boxes		Packaging	1.15	kg	2002	ILCD	EU-25
EURO Pallet (20 times-reuse)		Packaging	0.02	kg	2009	Confidential	Europe
Glass bottle (0.75 l, 2.9 times reuse)		Packaging	0.31	kg	2008	Confidential	UK
PET bottle (0.5 l)		Packaging	4.55	kg	2009	Confidential	UK
PET bottle (2 l)		Packaging	4.50	kg	2009	Confidential	UK
Polyethylene bottle (HDPE)		Packaging	3.15	kg	2004	PlasticsEurope	Europe
Polyethylene bottle (LDPE)		Packaging	3.32	kg	2004	PlasticsEurope	Europe
Polyethylene film (LDPE)		Packaging	2.49	kg	2004	PlasticsEurope	Europe
Polyethylene terephthalate bottle (PET)		Packaging	4.83	kg	2004	PlasticsEurope	Europe
Polyethylene terephthalate film (packed) (PET)		Packaging	5.58	kg	2004	PlasticsEurope	Europe
Polyethylene terephthalate film (PET)		Packaging	5.60	kg	2004	PlasticsEurope	Europe
Polypropylene film (extended) (PP)		Packaging	3.26	kg	2004	PlasticsEurope	Europe
Polystyrene granulate (PS, expandable)		Packaging	3.46	kg	2004	PlasticsEurope	Europe
Polythene bags		Packaging	1.39	kg	2006	Mortimer, N., et al. (2009)	UK
Polyurethane flexible foam (PU)		Packaging	4.77	kg	2004	PlasticsEurope	Europe
Polyurethane rigid foam (PU)		Packaging	4.31	kg	2004	PlasticsEurope	Europe
Polyvinyl chloride film (PVC)		Packaging	3.22	kg	2004	PlasticsEurope	Europe
PP container, for paint (10 l)		Packaging	3.38	kg	2009	CCaLC, confidential	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Incineration - glass/inert material		Waste	0.05	kg	2006	ILCD	EU-27
Incineration - glass/inert material (w. energy credit)		Waste	0.12	kg	2006	ILCD	EU-27
Incineration - biodegradable waste		Waste	0.05	kg	2006	ILCD	EU-27
Incineration - biodegradable waste (w. energy credit)		Waste	-0.14	kg	2006	ILCD	EU-27
Incineration - carton pack.		Waste	0.71	kg	2009	CCaLC	Europe
Incineration - municipal solid waste		Waste	0.33	kg	2006	ILCD	EU-27
Incineration - municipal solid waste (w. energy credit)		Waste	-0.10	kg	2006	ILCD	EU-27
Incineration - nylon		Waste	1.61	kg	2006	ILCD	EU-27
Incineration - nylon (w. energy credit)		Waste	0.66	kg	2006	ILCD	EU-27
Incineration - paper		Waste	0.04	kg	2006	ILCD	EU-27
Incineration - paper (w. energy credit)		Waste	-0.43	kg	2006	ILCD	EU-27
Incineration - plastics in MSW		Waste	2.28	kg	2006	ILCD	EU-27
Incineration - plastics in MSW (w. energy credit)		Waste	0.69	kg	2006	ILCD	EU-27
Incineration - plastics, PE/PB/PS/PP		Waste	3.23	kg	2006	ILCD	EU-27
Incineration - plastics, PE/PB/PS/PP (w. energy credit)		Waste	0.89	kg	2006	ILCD	EU-27
Incineration - plastics, PET/PMMA/PC		Waste	2.42	kg	2006	ILCD	EU-27
Incineration - plastics, PET/PMMA/PC (w. energy credit)		Waste	1.05	kg	2006	ILCD	EU-27
Incineration - PVC		Waste	2.47	kg	2006	ILCD	EU-27
Incineration - PVC (w. energy credit)		Waste	1.69	kg	2006	ILCD	EU-27
Incineration - textiles		Waste	0.41	kg	2006	ILCD	EU-27
Incineration - textiles (w. energy credit)		Waste	-0.33	kg	2006	ILCD	EU-27
Incineration - wood		Waste	0.03	kg	2006	ILCD	EU-27
Incineration - wood (w. energy credit)		Waste	-0.77	kg	2006	ILCD	EU-27
Incineration - wood products		Waste	0.04	kg	2006	ILCD	EU-27
Incineration - wood products (w. energy credit)		Waste	-0.78	kg	2006	ILCD	EU-27
Landfill - biodegradable waste		Waste	0.51	kg	2006	ILCD	EU-27

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Landfill - carton pack.		Waste	0.12	kg	2009	CCaLC	Europe
Landfill - ferro metals		Waste	0.01	kg	2006	ILCD	EU-27
Landfill - glass/inert matter		Waste	0.01	kg	2006	ILCD	EU-27
Landfill - municipal waste,1		Waste	0.72	kg	2006	ILCD	EU-27
Landfill - municipal waste,2		Waste	0.71	kg	2006	ILCD	EU-27
Landfill - municipal waste,3		Waste	0.91	kg	2006	ILCD	EU-27
Landfill - municipal waste,4		Waste	0.70	kg	2006	ILCD	EU-27
Landfill - paper		Waste	0.87	kg	2006	ILCD	EU-27
Landfill - plastic		Waste	0.07	kg	2006	ILCD	EU-27
Landfill - textiles		Waste	090	kg	2006	ILCD	EU-27
Landfill - wood		Waste	1.42	kg	2006	ILCD	EU-27
Landfill - wood products		Waste	1.45	kg	2006	ILCD	EU-27
Recycled Aluminium (new scrap)		Waste	0.32	kg	2008	European Aluminium Association (EAA)	Europe
Recycled aluminium (old scrap)		Waste	0.53	kg	2008	European Aluminium Association (EAA)	Europe
Soil and stone waste		Waste	0.00	kg	2006	Mortimer, N., et al. (2009)	UK
Wastewater treatment		Waste	0.0024	kg	2006	Mortimer, N., et al. (2009)	UK
Wastewater treatment - domestic		Waste	0.03	kg	2003	ILCD	EU-27
Wastewater treatment - industrial,1		Waste	0.036	kg	2003	ILCD	EU-27
Wastewater treatment - industrial,2		Waste	0.036	kg	2003	ILCD	EU-27
Wastewater treatment - industrial,3		Waste	0.08	kg	2003	ILCD	EU-27
Anglerfish, offshore trawling, ES	Food	Materials	9.38	kg	2010	Iribarren et al., 2010.	Spain
Apple juice, UK	Food	Materials	1.60	kg	2009	DEFRA, 2009.	UK
Apples	Food	Materials	0.24	kg	2004	Wallén et al., 2004.	Sweden
Apples (Cox), extensive, UK	Food	Materials	0.08	kg	2009	DEFRA, 2009.	UK
Apples (Cox), intensive, UK	Food	Materials	0.07	kg	2009	DEFRA, 2009.	UK
Apples (Cox), organic, UK	Food	Materials	0.10	kg	2009	DEFRA, 2009.	UK
Apples, conventional, DE	Food	Materials	0.88	kg	2008	PROBAS database, 2008.	Germany
Apples, IN	Food	Materials	0.36	kg	2010	Pathak et al., 2010	India
Apples, NL	Food	Materials	0.22	kg	2009	Blonk et al., 2009.	Netherlands

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Apples, NZ	Food	Materials	0.44	kg	2009	Blonk et al., 2009.	New Zealand
Apples, NZ	Food	Materials	0.90	kg	2010	McLaren et al., 2010	New Zealand
Aubergine (brinjal), IN	Food	Materials	0.141	kg	2010	Pathak et al., 2010	India
Bacon (steaky), from pork meat, DK	Food	Materials	3.29	kg	2003	Nielsen et al, 2003.	Denmark
Banana, IN	Food	Materials	0.0976	kg	2010	Pathak et al., 2010	India
Bananas	Food	Materials	0.45	kg	2004	Wallén et al., 2004.	Sweden
Bananas, EC	Food	Materials	0.472	kg	2009	Blonk et al., 2009.	Ecuador
Barley (spring), conventional, DK	Food	Materials	0.654	kg	2003	Nielsen et al, 2003.	Denmark
Barley (spring), conventional, UK	Food	Materials	0.52	kg	2006	Williams et al., 2006.	UK
Barley (spring), organic, DK	Food	Materials	0.578	kg	2003	Nielsen et al, 2003.	Denmark
Barley (spring), organic, UK	Food	Materials	0.72	kg	2006	Williams et al., 2006.	UK
Barley (winter), conventional, DK	Food	Materials	0.615	kg	2003	Nielsen et al, 2003.	Denmark
Barley (winter), conventional, UK	Food	Materials	0.6	kg	2006	Williams et al., 2006.	UK
Barley (winter), organic, UK	Food	Materials	0.6	kg	2006	Williams et al., 2006.	UK
Barley, conventional, DE	Food	Materials	0.354	kg	2008	PROBAS database, 2008.	Germany
Barley, integrated cultivation, DE	Food	Materials	0.367	kg	2008	PROBAS database, 2008.	Germany
Barley, organic, DE	Food	Materials	0.23	kg	2008	PROBAS database, 2008.	Germany
Beans (field), conventional, DE	Food	Materials	0.139	kg	2008	PROBAS database, 2008.	Germany
Beans (green)	Food	Materials	0.41	kg	2009	Broekema and Blonk, 2009.	Netherlands
Beans (green), canned	Food	Materials	1.319	kg	2009	Blonk et al., 2009.	Netherlands
Beans (green), cultivated in pots	Food	Materials	1.639	kg	2009	Blonk et al., 2009.	Netherlands
Beans (winter), conventional, UK	Food	Materials	0.096	kg	2009	DEFRA, 2009.	UK
Beans (winter), organic, UK	Food	Materials	0.12	kg	2009	DEFRA, 2009.	UK
Beef cottage pie, packed ready-made meal	Food	Materials	8.25	kg	2009	DEFRA, 2009.	UK
Beef fillet, at slaughterhouse, DK	Food	Materials	44.8	kg	2003	Nielsen et al, 2003.	Denmark

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Beef flanchet, at slaughterhouse, DK	Food	Materials	22.4	kg	2003	Nielsen et al, 2003.	Denmark
Beef foreend, at slaughterhouse, DK	Food	Materials	24.5	kg	2003	Nielsen et al, 2003.	Denmark
Beef knuckle shank, at slaughterhouse, DK	Food	Materials	4.06	kg	2003	Nielsen et al, 2003.	Denmark
Beef meat (bone free), BR	Food	Materials	41	kg	2009	Cederberg et al., 2009.	Brazil
Beef meat (dairy), GLO	Food	Materials	15.6	kg	2010	FAO, 2010	Global
Beef meat (dairy), intensive, UK	Food	Materials	10	kg	2009	DEFRA, 2009.	UK
Beef meat (dairy), surplus, GLO	Food	Materials	20.2	kg	2010	FAO, 2010	Global
Beef meat (suckler), BR	Food	Materials	40	kg	2009	DEFRA, 2009.	Brazil
Beef meat (suckler), extensive, UK	Food	Materials	30	kg	2009	DEFRA, 2009.	UK
Beef meat (suckler), organic, UK	Food	Materials	32	kg	2009	DEFRA, 2009.	UK
Beef meat and bones, unprocessed	Food	Materials	6.25	kg	2004	Wallén et al., 2004.	Sweden
Beef meat, BR	Food	Materials	28	kg	2009	Cederberg et al., 2009.	Brazil
Beef meat, conventional, at butcher, DE	Food	Materials	13.3	kg	2008	PROBAS database, 2008.	Germany
Beef meat, conventional, at slaughterhouse, DE	Food	Materials	8.9	kg	2008	PROBAS database, 2008.	Germany
Beef meat, conventional, frozen, at butcher, DE	Food	Materials	14	kg	2008	PROBAS database, 2008.	Germany
Beef meat, EU	Food	Materials	28.7	kg	2008	Weidema et al., 2008.	EU
Beef meat, JP	Food	Materials	36.4	kg	2007	Ogino et al., 2007	Japan
Beef meat, minced, at slaughterhouse, DK	Food	Materials	4.35	kg	2003	Nielsen et al, 2003.	Denmark
Beef meat, organic, at butcher, DE	Food	Materials	11.4	kg	2008	PROBAS database, 2008.	Germany
Beef meat, organic, at slaughterhouse, DE	Food	Materials	7.61	kg	2008	PROBAS database, 2008.	Germany
Beef meat, organic, frozen, at butcher, DE	Food	Materials	12.1	kg	2008	PROBAS database, 2008.	Germany
Beef meat, UK	Food	Materials	15.45	kg	2006	Williams et al., 2006.	UK
Beef outside, at slaughterhouse, DK	Food	Materials	22.3	kg	2003	Nielsen et al, 2003.	Denmark
Beef round, at slaughterhouse, DK	Food	Materials	22.1	kg	2003	Nielsen et al, 2003.	Denmark
Beef steak, at slaughterhouse, DK	Food	Materials	42.4	kg	2003	Nielsen et al, 2003.	Denmark
Beef tenderloin, at slaughterhouse, DK	Food	Materials	67.9	kg	2003	Nielsen et al, 2003.	Denmark

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Beef top round, at slaughterhouse, DK	Food	Materials	42.3	kg	2003	Nielsen et al, 2003.	Denmark
Beet leaves, conventional, DE	Food	Materials	0.0559	kg	2008	PROBAS database, 2008.	Germany
Berries, fresh and frozen	Food	Materials	0.79	kg	2004	Wallén et al., 2004.	Sweden
Biscuits and crackers	Food	Materials	2.64	kg	2004	Wallén et al., 2004.	Sweden
Blood sausage, conventional, DE	Food	Materials	7.77	kg	2008	PROBAS database, 2008.	Germany
Blood sausage, organic, DE	Food	Materials	7.25	kg	2008	PROBAS database, 2008.	Germany
Bread (crisp)	Food	Materials	2.65	kg	2004	Wallén et al., 2004.	Sweden
Bread (Kingsmill 50/50), 800 g loaf, white and wholemeal flour mixture	Food	Materials	1.5	kg	2009	Kingsmill	UK
Bread (Kingsmill Great Everyday), 800 g loaf, white flour	Food	Materials	1.625	kg	2009	Kingsmill	UK
Bread (Kingsmill Tasty Wholemeal), 800 g loaf, wholemeal flour	Food	Materials	1.625	kg	2009	Kingsmill	UK
Bread (rye flour), fresh, DK	Food	Materials	0.721	kg	2003	Nielsen et al, 2003.	Denmark
Bread rolls, conventional, DE	Food	Materials	0.623	kg	2008	PROBAS database, 2008.	Germany
Bread rolls, conventional, frozen, DE	Food	Materials	0.721	kg	2008	PROBAS database, 2008.	Germany
Bread rolls, from wheat flour, fresh DK	Food	Materials	0.877	kg	2003	Nielsen et al, 2003.	Denmark
Bread rolls, from wheat flour, frozen DK	Food	Materials	0.89	kg	2003	Nielsen et al, 2003.	Denmark
Bread rolls, organic, DE	Food	Materials	0.515	kg	2008	PROBAS database, 2008.	Germany
Bread rolls, organic, frozen, DE	Food	Materials	0.613	kg	2008	PROBAS database, 2008.	Germany
Bread, by bread maker, DE	Food	Materials	0.712	kg	2008	PROBAS database, 2008.	Germany
Bread, from wheat flour, conventional, DE	Food	Materials	0.794	kg	2008	PROBAS database, 2008.	Germany
Bread, from wheat flour, conventional, UK	Food	Materials	0.715	kg	2006	Williams et al., 2006.	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Bread, from wheat flour, DK	Food	Materials	0.847	kg	2003	Nielsen et al, 2003.	Denmark
Bread, from wheat flour, fresh DK	Food	Materials	0.789	kg	2003	Nielsen et al, 2003.	Denmark
Bread, from wheat flour, frozen DK	Food	Materials	0.802	kg	2003	Nielsen et al, 2003.	Denmark
Bread, from wheat flour, organic, DE	Food	Materials	0.678	kg	2008	PROBAS database, 2008.	Germany
Bread, from wheat flour, organic, UK	Food	Materials	0.782	kg	2006	Williams et al., 2006.	UK
Bread, from wheat flour, SE	Food	Materials	0.76	kg	2004	Wallén et al., 2004.	Sweden
Bread, from white flour, UK	Food	Materials	0.726	kg	2009	DEFRA, 2009.	UK
Bread, IN	Food	Materials	0.2572	kg	2010	Pathak et al., 2010	India
Bread, organic, by bread maker , DE	Food	Materials	0.6	kg	2008	PROBAS database, 2008.	Germany
Breadcrumbs	Food	Materials	3.055	kg	2009	Broekema and Blonk, 2009.	Netherlands
Breakfast cereals	Food	Materials	1	kg	2004	Wallén et al., 2004.	Sweden
Buns and cakes	Food	Materials	0.91	kg	2004	Wallén et al., 2004.	Sweden
Burger, IN	Food	Materials	0.2043	kg	2010	Pathak et al., 2010	India
Butter	Food	Materials	0.98	kg	2004	Wallén et al., 2004.	Sweden
Butter, conventional, DE	Food	Materials	23.7	kg	2008	PROBAS database, 2008.	Germany
Butter, IN	Food	Materials	0.9974	kg	2010	Pathak et al., 2010	India
Butter, organic, DE	Food	Materials	22	kg	2008	PROBAS database, 2008.	Germany
Cabbage (white), conventional, DE	Food	Materials	0.0303	kg	2008	PROBAS database, 2008.	Germany
Cabbages	Food	Materials	0.5	kg	2004	Wallén et al., 2004.	Sweden
Cacao beans	Food	Materials	0.32286	kg	2009	Ntiamoah and Afrane, 2008.	Ghana
Carrot, conventional, NL	Food	Materials	0.035	kg	2009	Broekema and Blonk, 2009.	Netherlands
Carrot, organic, NL	Food	Materials	0.065	kg	2009	Broekema and Blonk, 2009.	Netherlands
Carrot, UK	Food	Materials	0.35	kg	2009	DEFRA, 2009.	UK
Cauliflower (early crop), conventional, NL	Food	Materials	0.333	kg	2009	Blonk et al., 2009.	Netherlands
Cauliflower (early crop), organic, NL	Food	Materials	0.389	kg	2009	Blonk et al., 2009.	Netherlands

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Cauliflower (summer crop), conventional, NL	Food	Materials	0.222	kg	2009	Blonk et al., 2009.	Netherlands
Cauliflower (summer crop), organic, NL	Food	Materials	0.25	kg	2009	Blonk et al., 2009.	Netherlands
Cauliflower, IN	Food	Materials	0.1384	kg	2010	Pathak et al., 2010	India
Chapatti, IN	Food	Materials	0.2506	kg	2010	Pathak et al., 2010	India
Cheese (cottage), NL	Food	Materials	2.9	kg	2009	Broekema and Blonk, 2009.	Netherlands
Cheese (curd), conventional, DE	Food	Materials	1.82	kg	2008	PROBAS database, 2008.	Germany
Cheese (curd), organic, DE	Food	Materials	1.7	kg	2008	PROBAS database, 2008.	Germany
Cheese (mild Cheddar), packed, UK	Food	Materials	9.8	kg	2009	DEFRA, 2009.	UK
Cheese (mozzarella), organic	Food	Materials	7.3	kg	2009	Broekema and Blonk, 2009.	Netherlands
Cheese (semi-hard), SE	Food	Materials	8.8	kg	2002	Berlin, 2002.	Sweden
Cheese, conventional, DE	Food	Materials	8.29	kg	2008	PROBAS database, 2008.	Germany
Cheese, DK	Food	Materials	11.3	kg	2003	Nielsen et al, 2003.	Denmark
Cheese, NZ	Food	Materials	10	kg	2007	Basset-Mens at al., 2007.	New Zealand
Cheese, organic, DE	Food	Materials	7.74	kg	2008	PROBAS database, 2008.	Germany
Chicken meat, Centre West region, BR	Food	Materials	1.7	kg	2010	Prudêncio da Silva et al., 2010	Brazil
Chicken meat, conventional, at butcher, DE	Food	Materials	3.47	kg	2008	PROBAS database, 2008.	Germany
Chicken meat, conventional, at slaughterhouse, DE	Food	Materials	2.05	kg	2008	PROBAS database, 2008.	Germany
Chicken meat, conventional, frozen, at butcher, DE	Food	Materials	4.23	kg	2008	PROBAS database, 2008.	Germany
Chicken meat, conventional, UK	Food	Materials	4.16	kg	2006	Williams et al., 2006.	UK
Chicken meat, free range, UK	Food	Materials	5.21	kg	2006	Williams et al., 2006.	UK
Chicken meat, fresh, DK	Food	Materials	3.13	kg	2003	Nielsen et al, 2003.	Denmark
Chicken meat, frozen, DK	Food	Materials	3.3	kg	2003	Nielsen et al, 2003.	Denmark
Chicken meat, frozen, large scale, BR	Food	Materials	2.25	kg	2008	Prudêncio da Silva	Brazil

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Chicken meat, frozen, small scale, BR	Food	Materials	2.583	kg	2008	Júnior et al., 2008 Prudêncio da Silva Júnior et al., 2008	Brazil
Chicken meat, IN	Food	Materials	0.8011	kg	2010	Pathak et al., 2010	India
Chicken meat, indoor, intensive, UK	Food	Materials	3.1	kg	2009	DEFRA, 2009.	UK
Chicken meat, organic, at butcher, DE	Food	Materials	3.02	kg	2008	PROBAS database, 2008.	Germany
Chicken meat, organic, at slaughterhouse, DE	Food	Materials	1.78	kg	2008	PROBAS database, 2008.	Germany
Chicken meat, organic, frozen, at butcher, DE	Food	Materials	3.78	kg	2008	PROBAS database, 2008.	Germany
Chicken meat, outdoor, extensive, UK	Food	Materials	3.7	kg	2009	DEFRA, 2009.	UK
Chicken meat, outdoor, organic, UK	Food	Materials	4.1	kg	2009	DEFRA, 2009.	UK
Chicken meat, South region, BR	Food	Materials	1.4	kg	2010	Prudêncio da Silva et al., 2010	Brazil
Chicken meat, South West region, FR	Food	Materials	3.9	kg	2010	Prudêncio da Silva et al., 2010	France
Chicken meat, West region, FR	Food	Materials	2.2	kg	2010	Prudêncio da Silva et al., 2010	France
Chocolate and sweets	Food	Materials	1.8	kg	2004	Wallén et al., 2004.	Sweden
Chocolate, GH	Food	Materials	0.35602	kg	2009	Ntiamoah and Afrane, 2009.	Ghana
Cocoa beans, GH	Food	Materials	42	kg	2009	DEFRA, 2009.	Ghana
Cocoa powder, GH	Food	Materials	210	kg	2009	DEFRA, 2009.	UK
Cod fillet, fresh, DK	Food	Materials	2.74	kg	2003	Nielsen et al, 2003.	Denmark
Cod fillet, frozen, DK	Food	Materials	2.83	kg	2003	Nielsen et al, 2003.	Denmark
Cod, ex-harbour, DK	Food	Materials	1.083	kg	2003	Nielsen et al, 2003.	Denmark
Cod, processed product, NO	Food	Materials	1.56	kg	2010	Svanes et al., 2010	Norway
Cod, whole gutted, NO	Food	Materials	1.96	kg	2010	Svanes et al., 2010	Norway
Coffee cherries, KE	Food	Materials	8.2	kg	2009	DEFRA, 2009.	Kenya
Coffee, freeze dried	Food	Materials	4.5	kg	2009	Humbert et al., 2009.	Global
Coffee, instant	Food	Materials	130	kg	2009	DEFRA, 2009.	UK
Coffee, tea and cocoa	Food	Materials	7.96	kg	2004	Wallén et al., 2004.	Sweden
Conger eel, offshore lining, ES	Food	Materials	3.070	kg	2010	Iribarren et al., 2010.	Spain
Cream	Food	Materials	0.41	kg	2004	Wallén et al., 2004.	Sweden

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Cream, conventional, DE	Food	Materials	7.51	kg	2008	PROBAS database, 2008.	Germany
Cream, organic, DE	Food	Materials	6.99	kg	2008	PROBAS database, 2008.	Germany
Cucumber	Food	Materials	0.37	kg	2004	Wallén et al., 2004.	Sweden
Cucumber, fuel heated, CH	Food	Materials	1.741	kg	2010	Marton et al., 2010.	Switzerland
Cucumber, waste heat, CH	Food	Materials	0.178	kg	2010	Marton et al., 2010.	Switzerland
Curd, IN	Food	Materials	0.7448	kg	2010	Pathak et al., 2010	India
Cured meat, sausages	Food	Materials	3.3	kg	2004	Wallén et al., 2004.	Sweden
Dosa, IN	Food	Materials	0.7293	kg	2010	Pathak et al., 2010	India
Dried fruits	Food	Materials	2.895	kg	2009	Broekema and Blonk, 2009.	Netherlands
Duck in Hoisin sauce (packed ready-made meal)	Food	Materials	2.44	kg	2009	DEFRA, 2009.	UK
Duck meat, UK	Food	Materials	4.1	kg	2009	DEFRA, 2009.	UK
Egg whites	Food	Materials	16.59	kg	2009	Broekema and Blonk, 2009.	Netherlands
Eggs, AU	Food	Materials	1.6	kg	2010	Wiedemann et al., 2010.	Australia
Eggs, CA	Food	Materials	1.73	kg	2009	Vergé et al., 2009.	Canada
Eggs, free range, conventional, DE	Food	Materials	2.61	kg	2008	PROBAS database, 2008.	Germany
Eggs, free range, organic, DE	Food	Materials	1.44	kg	2008	PROBAS database, 2008.	Germany
Eggs, from deep litter housing system, DE	Food	Materials	1.83	kg	2008	PROBAS database, 2008.	Germany
Eggs, IN	Food	Materials	0.668	kg	2010	Pathak et al., 2010	India
Eggs, organic, NL	Food	Materials	4.038	kg	2008	Dekker et al., 2008.	Netherlands
Eggs, SE	Food	Materials	2.48	kg	2004	Wallén et al., 2004.	Sweden
Eggs, UK	Food	Materials	2.5	kg	2009	DEFRA, 2009.	UK
Fish products	Food	Materials	2.01	kg	2004	Wallén et al., 2004.	Sweden
Fish, filleted, frozen	Food	Materials	6.53	kg	2004	Wallén et al., 2004.	Sweden
Fish, IN	Food	Materials	0.7565	kg	2010	Pathak et al., 2010	India
Fish, industrial, ex-harbour, DK	Food	Materials	0.208	kg	2003	Nielsen et al, 2003.	Denmark

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Fish, unprocessed	Food	Materials	2.6	kg	2004	Wallén et al., 2004.	Sweden
Fish/prawns, polyculture, PH	Food	Materials	3.553	kg	2008	Baruthio et al., 2008.	Phillipines
Flatfish fillet, DK	Food	Materials	20.856	kg	2008	Thrane, 2008.	Denmark
Flatfish, ex-harbour, DK	Food	Materials	3	kg	2003	Nielsen et al, 2003.	Denmark
Flatfish, fresh, DK	Food	Materials	7.38	kg	2003	Nielsen et al, 2003.	Denmark
Flatfish, frozen, DK	Food	Materials	7.47	kg	2003	Nielsen et al, 2003.	Denmark
Flour, including baking mix	Food	Materials	0.99	kg	2004	Wallén et al., 2004.	Sweden
Fork beard, offshore lining, ES	Food	Materials	4.940	kg	2010	Iribarren et al., 2010.	Spain
Fruit conserves, conventional, DE	Food	Materials	1.08	kg	2008	PROBAS database, 2008.	Germany
Fruit jam	Food	Materials	0.81	kg	2004	Wallén et al., 2004.	Sweden
Fruit jam, conventional, DE	Food	Materials	1.32	kg	2008	PROBAS database, 2008.	Germany
Fruit juice, DE	Food	Materials	1.49	kg	2008	PROBAS database, 2008.	Germany
Fruit juices and syrups	Food	Materials	0.99	kg	2004	Wallén et al., 2004.	Sweden
Fruit smoothie (Innocent), blackberry, raspberry and boysenberry flavour	Food	Materials	1.03	kg	2009	Innocent	UK
Fruit smoothie (Innocent), cranberry and raspberry flavour	Food	Materials	1.045	kg	2009	Innocent	UK
Fruit smoothie (Innocent), mango and passion fruit flavour	Food	Materials	1.035	kg	2009	Innocent	UK
Fruit smoothie (Innocent), pineapple, banana and cocount flavour	Food	Materials	1.035	kg	2009	Innocent	UK
Fruit smoothie (Innocent), strawberry and banana flavour	Food	Materials	1.15	kg	2009	Innocent	UK
Fruit, frozen, DE	Food	Materials	0.649	kg	2008	PROBAS database, 2008.	Germany
Fruit, generic	Food	Materials	0.3	kg	2008	PROBAS database, 2008.	
Fruit, generic, DE	Food	Materials	0.274	kg	2008	PROBAS database, 2008.	Germany
Fruit, generic, EU	Food	Materials	0.266	kg	2008	PROBAS database, 2008.	EU
Fruits, fresh	Food	Materials	0.29	kg	2004	Wallén et al., 2004.	Sweden
Garlic, UK	Food	Materials	0.57	kg	2009	DEFRA, 2009.	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Hake, coastal trawling, ES	Food	Materials	3.99	kg	2010	Iribarren et al., 2010.	Spain
Hake, offshore lining, ES	Food	Materials	5.700	kg	2010	Iribarren et al., 2010.	Spain
Hake, offshore trawling, ES	Food	Materials	6.260	kg	2010	Iribarren et al., 2010.	Spain
Ham, conventional, DE	Food	Materials	4.6	kg	2008	PROBAS database, 2008.	Germany
Ham, DK	Food	Materials	3.29	kg	2003	Nielsen et al, 2003.	Denmark
Ham, organic, DE	Food	Materials	4.31	kg	2008	PROBAS database, 2008.	Germany
Hens (spent), conventional, at slaughterhouse, DE	Food	Materials	0.531	kg	2008	PROBAS database, 2008.	Germany
Hens (spent), free range, at slaughterhouse, DE	Food	Materials	0.839	kg	2008	PROBAS database, 2008.	Germany
Herring fillet, fresh, DK	Food	Materials	1.28	kg	2003	Nielsen et al, 2003.	Denmark
Herring fillet, frozen, DK	Food	Materials	1.43	kg	2003	Nielsen et al, 2003.	Denmark
Herring, ex-harbour, DK	Food	Materials	0.562	kg	2003	Nielsen et al, 2003.	Denmark
Honey (Mey Selections), glass jar, 227 g, UK	Food	Materials	3.3	kg	2009	Mey Selections	UK
Honey (Mey Selections), kilner glass jar, UK	Food	Materials	1.8	kg	2009	Mey Selections	UK
Honey (Mey Selections), small glass jar, UK	Food	Materials	5.58	kg	2009	Mey Selections	UK
Ice-cream	Food	Materials	0.64	kg	2004	Wallén et al., 2004.	Sweden
Idli, IN	Food	Materials	0.6825	kg	2010	Pathak et al., 2010	India
Jaffa cakes, UK	Food	Materials	2.55	kg	2009	DEFRA, 2009.	UK
Kiwi, NZ	Food	Materials	1.27	kg	2010	McLaren et al., 2010	New Zealand
Lamb meat (lowland), intensive, UK	Food	Materials	28	kg	2009	DEFRA, 2009.	UK
Lamb meat (lowland), organic, UK	Food	Materials	27	kg	2009	DEFRA, 2009.	UK
Lamb meat (upland), extensive, UK	Food	Materials	39	kg	2009	DEFRA, 2009.	UK
Lamb meat, NZ	Food	Materials	33	kg	2009	DEFRA, 2009.	New Zealand
Lamb meat, UK	Food	Materials	14.73	kg	2006	Williams et al., 2006.	UK
Lamb shanks and roasted potatoes, packed ready-made meal	Food	Materials	19.23	kg	2009	DEFRA, 2009.	UK
Lassi, IN	Food	Materials	0.3453	kg	2010	Pathak et al., 2010	India

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Leek, NL	Food	Materials	0.17	kg	2009	Broekema and Blonk, 2009.	Netherlands
Lemon essential oil, IT	Food	Materials	43.8	kg	2009	Beccali et al., 2009.	Italy
Lemon juice (concentrated), IT	Food	Materials	4	kg	2009	Beccali et al., 2009.	Italy
Lemon juice (natural), IT	Food	Materials	0.7	kg	2009	Beccali et al., 2009.	Italy
Lettuce, fuel heated, CH	Food	Materials	4.507	kg	2010	Marton et al., 2010.	Switzerland
Lettuce, waste heat, CH	Food	Materials	0.453	kg	2010	Marton et al., 2010.	Switzerland
Ling (common), offshore lining, ES	Food	Materials	2.470	kg	2010	Iribarren et al., 2010.	Spain
Lobster (Norway), ex harbour	Food	Materials	18.36	kg	2003	Nielsen et al, 2003.	Denmark
Lobster (Norway), offshore trawling, ES	Food	Materials	25.483	kg	2010	Iribarren et al., 2010.	Spain
Mackerel (Atlantic horse), coastal seining, ES	Food	Materials	0.929	kg	2010	Iribarren et al., 2010.	Spain
Mackerel (Atlantic horse), coastal trawling, ES	Food	Materials	0.88	kg	2010	Iribarren et al., 2010.	Spain
Mackerel (Atlantic), coastal seining, ES	Food	Materials	0.578	kg	2010	Iribarren et al., 2010.	Spain
Mackerel (Atlantic), coastal trawling, ES	Food	Materials	0.547	kg	2010	Iribarren et al., 2010.	Spain
Mackerel (chub), coastal seining, ES	Food	Materials	0.739	kg	2010	Iribarren et al., 2010.	Spain
Mackerel fillet, fresh, DK	Food	Materials	0.46	kg	2003	Nielsen et al, 2003.	Denmark
Mackerel fillet, frozen, DK	Food	Materials	0.621	kg	2003	Nielsen et al, 2003.	Denmark
Mackerel, ex harbour, DK	Food	Materials	0.169	kg	2003	Nielsen et al, 2003.	Denmark
Maize (corn grain), Codington, South Dakota, US	Food	Materials	0.289	kg	2009	Kim et al., 2009.	USA
Maize (corn grain), Freeborn, Minnesota, US	Food	Materials	0.416	kg	2009	Kim et al., 2009.	USA
Maize (corn grain), Fulton, Illinois, US	Food	Materials	0.389	kg	2009	Kim et al., 2009.	USA
Maize (corn grain), Hamilton, Nebraska, US	Food	Materials	0.37	kg	2009	Kim et al., 2009.	USA
Maize (corn grain), Hardin, Iowa, US	Food	Materials	0.254	kg	2009	Kim et al., 2009.	USA
Maize (corn grain), Macon, Missouri, US	Food	Materials	0.825	kg	2009	Kim et al., 2009.	USA
Maize (corn grain), Morrison, Minnesota, US	Food	Materials	0.442	kg	2009	Kim et al., 2009.	USA

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Maize (corn grain), Tuscola, Michigan, US	Food	Materials	0.401	kg	2009	Kim et al., 2009.	USA
Maize (corn)	Food	Materials	0.29	kg	2009	Broekema and Blonk, 2009.	Netherlands
Maize (corn), organic	Food	Materials	0.32	kg	2009	Broekema and Blonk, 2009.	Netherlands
Maize, UK	Food	Materials	0.34	kg	2009	DEFRA, 2009.	UK
Malt, from conventional barley, DE	Food	Materials	0.649	kg	2008	PROBAS database, 2008.	Germany
Malt, from organic barley, DE	Food	Materials	0.495	kg	2008	PROBAS database, 2008.	Germany
Malted barley, NL	Food	Materials	0.705	kg	2009	Broekema and Blonk, 2009.	Netherlands
Margarine	Food	Materials	2.12	kg	2004	Wallén et al., 2004.	Sweden
Margarine, conventional, DE	Food	Materials	0.649	kg	2008	PROBAS database, 2008.	Germany
Margarine, organic, DE	Food	Materials	0.497	kg	2008	PROBAS database, 2008.	Germany
Meal (1), homemade, DK	Food	Materials	4.6	kg	2007	Dalgaard et al., 2007.	Denmark
Meal (1), homemade, ES	Food	Materials	1.77	kg	2008	Davis et al., 2008.	Spain
Meal (1), homemade, SE	Food	Materials	1.19	kg	2008	Davis et al., 2008.	Sweden
Meal (2), homemade, DK	Food	Materials	3.4	kg	2007	Dalgaard et al., 2007.	Denmark
Meal (2), homemade, ES	Food	Materials	1.76	kg	2008	Davis et al., 2008.	Spain
Meal (2), homemade, SE	Food	Materials	1.15	kg	2008	Davis et al., 2008.	Sweden
Meal (3), homemade, DK	Food	Materials	3.8	kg	2007	Dalgaard et al., 2007.	Denmark
Meal (3), homemade, ES	Food	Materials	1.74	kg	2008	Davis et al., 2008.	Spain
Meal (3), homemade, SE	Food	Materials	1.22	kg	2008	Davis et al., 2008.	Sweden
Meal (ready-made), conventional, DE	Food	Materials	1.47	kg	2008	PROBAS database, 2008.	Germany
Meal (ready-made), organic, DE	Food	Materials	1.32	kg	2008	PROBAS database, 2008.	Germany
Meal, homemade, vegetarian, ES	Food	Materials	1.16	kg	2008	Davis et al., 2008.	Spain
Meal, homemade, vegetarian, SE	Food	Materials	0.54	kg	2008	Davis et al., 2008.	Sweden
Meat products, frozen	Food	Materials	0.2	kg	2004	Wallén et al., 2004.	Sweden

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Meat substitute made from milk (Valess, Milner 30+)	Food	Materials	5.64	kg	2009	Broekema and Blonk, 2009.	Netherlands
Meat, cultured in vitro	Food	Materials	1.508	kg	2010	Tuomisto and Teixeira de Mattos, 2010.	Italy
Meats and bones	Food	Materials	2.36	kg	2004	Wallén et al., 2004.	Sweden
Megrim, offshore trawling, ES	Food	Materials	7.570	kg	2010	Iribarren et al., 2010.	Spain
Melon, IT	Food	Materials	1.375	kg	2010	Cellura et al., 2010.	Italy
Milk (condensed), conventional, DE	Food	Materials	2.43	kg	2008	PROBAS database, 2008.	Germany
Milk (condensed), organic, DE	Food	Materials	2.29	kg	2008	PROBAS database, 2008.	Germany
Milk (goat), conventional, FR	Food	Materials	1.272	kg	2008	Kanyarushoki et al., 2008.	France
Milk (sour), processed	Food	Materials	0.4	kg	2004	Wallén et al., 2004.	Sweden
Milk (Tesco), semi-skimmed, UK	Food	Materials	1.38	kg	2009	Tesco	UK
Milk (Tesco), skimmed, UK	Food	Materials	1.26	kg	2009	Tesco	UK
Milk (Tesco), whole, UK	Food	Materials	1.61	kg	2009	Tesco	UK
Milk powder, conventional, DE	Food	Materials	7.97	kg	2008	PROBAS database, 2008.	Germany
Milk powder, DK	Food	Materials	8.69	kg	2003	Nielsen et al, 2003.	Denmark
Milk powder, organic, DE	Food	Materials	7.51	kg	2008	PROBAS database, 2008.	Germany
Milk, conventional (1), farm gate, FR	Food	Materials	0.88	kg	2008	Kanyarushoki et al., 2008.	France
Milk, conventional (2), farm gate, FR	Food	Materials	1.033	kg	2008	Kanyarushoki et al., 2008.	France
Milk, conventional, DE	Food	Materials	0.845	kg	2008	PROBAS database, 2008.	Germany
Milk, conventional, FR	Food	Materials	0.942	kg	2008	Corson and van der Werf, 2008.	France
Milk, conventional, high yield, SE	Food	Materials	0.896	kg	2004	Cederberg and Flysjö, 2004.	Sweden
Milk, conventional, medium yield, SE	Food	Materials	1.037	kg	2004	Cederberg and Flysjö, 2004.	Sweden
Milk, conventional, NL	Food	Materials	1.4	kg	2008	Thomassen et al., 2008.	Netherlands

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Milk, conventional, processing plant gate, FR	Food	Materials	1.167	kg	2009	Kanyarushoki et al., 2008.	France
Milk, conventional, SE	Food	Materials	0.95	kg	2000	Cederberg & Mattsson, 2000.	Sweden
Milk, East midland, US	Food	Materials	1.104	kg	2010	Thoma et al., 2010.	USA
Milk, ES	Food	Materials	1.05	kg	2003	Hospido et al., 2003.	Spain
Milk, EU	Food	Materials	2.4	kg	2008	Weidema et al., 2008.	EU
Milk, extensive, DE	Food	Materials	1.3	kg	2001	Hass et al., 2001	Germany
Milk, extensive, low yield, UK	Food	Materials	1.442	kg	2009	DEFRA, 2009.	UK
Milk, GLO	Food	Materials	2.4	kg	2010	FAO, 2010	Global
Milk, high quality, IT	Food	Materials	1.54	kg	2010	Fantin et al., 2010	Italy
Milk, IE	Food	Materials	1.3	kg	2005	Casey and Holden, 2005.	Ireland
Milk, IN	Food	Materials	0.7668	kg	2010	Pathak et al., 2010	India
Milk, intensive, DE	Food	Materials	1.3	kg	2001	Hass et al., 2001	Germany
Milk, intensive, high yield, UK	Food	Materials	1.236	kg	2009	DEFRA, 2009.	UK
Milk, Italian Alps (1), IT	Food	Materials	1.05	kg	2010	Penati et al, 2010.	Italy
Milk, Italian Alps (2), IT	Food	Materials	1.09	kg	2010	Penati et al, 2010.	Italy
Milk, Italian Alps (3), IT	Food	Materials	1.08	kg	2010	Penati et al, 2010.	Italy
Milk, Italian Alps (4), IT	Food	Materials	1.11	kg	2010	Penati et al, 2010.	Italy
Milk, Italian Alps (5), IT	Food	Materials	1.15	kg	2010	Penati et al, 2010.	Italy
Milk, low fat, DK	Food	Materials	1.16	kg	2003	Nielsen et al, 2003.	Denmark
Milk, North East, US	Food	Materials	1.042	kg	2010	Thoma et al., 2010.	USA
Milk, NZ	Food	Materials	0.856	kg	2008	Basset-Mens et al., 2008.	New Zealand
Milk, organic (1), DE	Food	Materials	0.788	kg	2008	PROBAS database, 2008.	Germany
Milk, organic (1), SE	Food	Materials	1.1	kg	2000	Cederberg & Mattsson, 2000.	Sweden
Milk, organic (2), DE	Food	Materials	1	kg	2001	Hass et al., 2001	Germany
Milk, organic (2), SE	Food	Materials	0.938	kg	2004	Cederberg and Flysjö, 2004.	Sweden
Milk, organic, FR	Food	Materials	1.012	kg	2008	Corson and van der Werf, 2008.	France
Milk, organic, NL	Food	Materials	1.5	kg	2008	Thomassen et al., 2008.	Netherland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
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Milk, organic, UK	Food	Materials	1.339	kg	2009	DEFRA, 2009.	UK
Milk, organic, US	Food	Materials	1.71	kg	2008	Heller et al., 2008.	USA
Milk, SE	Food	Materials	0.41	kg	2004	Wallén et al., 2004.	Sweden
Milk, semi-skimmed, NL	Food	Materials	1.01	kg	2009	Broekema and Blonk, 2009.	Netherlands
Milk, skimmed, DK	Food	Materials	1.2	kg	2003	Nielsen et al, 2003.	Denmark
Milk, skimmed, NL	Food	Materials	1.01	kg	2009	Broekema and Blonk, 2009.	Netherlands
Milk, South East, US	Food	Materials	1.449	kg	2010	Thoma et al., 2010.	USA
Milk, South Santa Catarina, BR	Food	Materials	1.42	kg	2010	de Leis et al., 2010	Brazil
Milk, West coast, US	Food	Materials	1.207	kg	2010	Thoma et al., 2010.	USA
Milk, West midland, US	Food	Materials	1.471	kg	2010	Thoma et al., 2010.	USA
Milk, West Santa Catarina, BR	Food	Materials	1.692	kg	2010	de Leis et al., 2010	Brazil
Milk, whole, DK	Food	Materials	1.09	kg	2003	Nielsen et al, 2003.	Denmark
Mushrooms, hand picked, fresh	Food	Materials	1.972	kg	2009	Blonk et al., 2009.	Netherlands
Mushrooms, machine harvested, canned	Food	Materials	2.944	kg	2009	Blonk et al., 2009.	Netherlands
Mushrooms, machine harvested, fresh	Food	Materials	1.625	kg	2009	Blonk et al., 2009.	Netherlands
Mushrooms, machine harvested, glass bottle	Food	Materials	2.917	kg	2009	Blonk et al., 2009.	Netherlands
Mussels, aquaculture, ES	Food	Materials	0.083	kg	2010	Iribarren et al., 2010.	Spain
Mussels, ex-harbour, DK	Food	Materials	0.0394	kg	2003	Nielsen et al, 2003.	Denmark
Mutton meat, IN	Food	Materials	9.1493	kg	2010	Pathak et al., 2010	India
Mycoprotein	Food	Materials	0.605	kg	2009	Broekema and Blonk, 2009.	Netherlands
Mycoprotein (Quorn), minced (1)	Food	Materials	2.3	kg	2009	Broekema and Blonk, 2009.	Netherlands
Mycoprotein (Quorn), minced (2)	Food	Materials	6.84	kg	2010	Finnigan et al., 2010	UK
Oat flakes (Quaker Oatso Simple), pre-cooked	Food	Materials	2.59	kg	2009	Pepsi Co.	UK
Oat flakes (Quaker)	Food	Materials	2.5	kg	2009	Pepsi Co.	UK
Oat flakes, DK	Food	Materials	0.662	kg	2003	Nielsen et al, 2003.	Denmark

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Oatmeal and other grains	Food	Materials	1	kg	2004	Wallén et al., 2004.	Sweden
Oats, conventional, DE	Food	Materials	0.349	kg	2008	PROBAS database, 2008.	Germany
Oats, conventional, DK	Food	Materials	0.566	kg	2003	Nielsen et al, 2003.	Denmark
Oats, organic DK	Food	Materials	0.58	kg	2003	Nielsen et al, 2003.	Denmark
Oats, organic, DE	Food	Materials	0.109	kg	2008	PROBAS database, 2008.	Germany
Olive oil, CY	Food	Materials	7.25	kg	2006	Avraamides and Fatta, 2006.	CY
Olive oil, GR	Food	Materials	12.7	kg	2005	Papadakis et al., 2005	Greece
Olive oil, organic	Food	Materials	0.795	kg	2009	Broekema and Blonk, 2009.	Netherlands
Onion, fried, organic, NL	Food	Materials	0.265	kg	2009	Broekema and Blonk, 2009.	Netherlands
Onions	Food	Materials	0.5	kg	2004	Wallén et al., 2004.	Sweden
Onions (spring), UK	Food	Materials	0.23	kg	2009	DEFRA, 2009.	UK
Onions, conventional, UK	Food	Materials	0.42	kg	2009	DEFRA, 2009.	UK
Onions, NL	Food	Materials	0.165	kg	2009	Broekema and Blonk, 2009.	Netherlands
Onions, organic, NL	Food	Materials	0.23	kg	2009	Broekema and Blonk, 2009.	Netherlands
Onions, organic, UK	Food	Materials	0.59	kg	2009	DEFRA, 2009.	UK
Orange essential oil, IT	Food	Materials	74.4	kg	2009	Beccali et al., 2009.	Italy
Orange juice (concentrated), IT	Food	Materials	6	kg	2009	Beccali et al., 2009.	Italy
Orange juice (natural), IT	Food	Materials	1	kg	2009	Beccali et al., 2009.	Italy
Orange juice (Tesco), 100% pure, squeezed	Food	Materials	1.44	kg	2009	Tesco	UK
Orange juice (Tesco), pure, 1 l	Food	Materials	0.96	kg	2009	Tesco	UK
Orange juice (Tesco), pure, 3 x 200 ml pack	Food	Materials	0.88	kg	2009	Tesco	UK
Orange juice (Tesco), pure, from concentrate	Food	Materials	1.04	kg	2009	Tesco	UK
Orange juice (Tropicana), pure, premium quality	Food	Materials	0.949	kg	2009	Pepsi Co.	UK
Oranges	Food	Materials	0.25	kg	2004	Wallén et al., 2004.	Sweden

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Oranges, ES	Food	Materials	0.29	kg	2005	Sanjuan et al., 2005	Spain
Paprika	Food	Materials	0.88	kg	2009	Broekema and Blonk, 2009.	Netherlands
Paprika, organic	Food	Materials	0.86	kg	2009	Broekema and Blonk, 2009.	Netherlands
Paratha, IN	Food	Materials	0.2617	kg	2010	Pathak et al., 2010	India
Pasta	Food	Materials	0.81	kg	2004	Wallén et al., 2004.	Sweden
Pasta, conventional, DE	Food	Materials	0.767	kg	2008	PROBAS database, 2008.	Germany
Pasta, conventional, frozen, DE	Food	Materials	0.542	kg	2008	PROBAS database, 2008.	Germany
Pasta, organic, DE	Food	Materials	0.62	kg	2008	PROBAS database, 2008.	Germany
Pasta, organic, frozen, DE	Food	Materials	0.434	kg	2008	PROBAS database, 2008.	Germany
Peas	Food	Materials	0.575	kg	2009	Broekema and Blonk, 2009.	Netherlands
Peas, conventional, DK	Food	Materials	0.5	kg	2003	Nielsen et al, 2003.	Denmark
Peas, organic	Food	Materials	0.39	kg	2009	Broekema and Blonk, 2009.	Netherlands
Pepper, IT	Food	Materials	1.049	kg	2010	Cellura et al., 2010.	Italy
Pilchard (European), coastal seining, ES	Food	Materials	0.737	kg	2010	Iribarren et al., 2010.	Spain
Pineapple, CR	Food	Materials	0.458	kg	2009	Blonk et al., 2009.	Croatia
Pineapple, GH	Food	Materials	1.3	kg	2009	DEFRA, 2009.	Ghana
Pineapple, organic, CR	Food	Materials	0.458	kg	2009	Blonk et al., 2009.	Croatia
Pineapple, organic, GH	Food	Materials	0.15	kg	2010	Adebah et al., 2010.	Ghana
Pizza, frozen, conventional, DE	Food	Materials	0.901	kg	2008	PROBAS database, 2008.	Germany
Pizza, frozen, organic, DE	Food	Materials	0.802	kg	2008	PROBAS database, 2008.	Germany
Pomfret (Atlantic), offshore lining, ES	Food	Materials	2.760	kg	2010	Iribarren et al., 2010.	Spain
Porbeagle, offshore lining, ES	Food	Materials	5.865	kg	2010	Iribarren et al., 2010.	Spain
Pork meat and bones, unprocessed	Food	Materials	6.1	kg	2004	Wallén et al., 2004.	Sweden
Pork meat, conventional, at butcher, DE	Food	Materials	3.22	kg	2008	PROBAS database, 2008.	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Pork meat, conventional, at slaughterhouse, DE	Food	Materials	2.58	kg	2008	PROBAS database, 2008.	Germany
Pork meat, conventional, DE	Food	Materials	3.6	kg	2009	Kool et al., 2009.	Netherlands
Pork meat, conventional, DK	Food	Materials	3.5	kg	2009	Kool et al., 2009.	UK
Pork meat, conventional, frozen, at butcher, DE	Food	Materials	3.98	kg	2008	PROBAS database, 2008.	Germany
Pork meat, conventional, NL	Food	Materials	3.7	kg	2009	Kool et al., 2009.	Germany
Pork meat, conventional, UK	Food	Materials	3.5	kg	2009	Kool et al., 2009.	Denmark
Pork meat, EU	Food	Materials	11.2	kg	2008	Weidema et al., 2008.	EU
Pork meat, extensive, outdoors, UK	Food	Materials	8.9	kg	2009	DEFRA, 2009.	UK
Pork meat, indoor, intensive, UK	Food	Materials	5.5	kg	2009	DEFRA, 2009.	UK
Pork meat, minced, DK	Food	Materials	3.28	kg	2003	Nielsen et al, 2003.	Denmark
Pork meat, North, AU	Food	Materials	5.6	kg	2010	Wiedemann et al., 2010.	Australia
Pork meat, organic, at butcher, DE	Food	Materials	3.01	kg	2008	PROBAS database, 2008.	Germany
Pork meat, organic, at slaughterhouse, DE	Food	Materials	2.41	kg	2008	PROBAS database, 2008.	Germany
Pork meat, organic, DE	Food	Materials	4.3	kg	2009	Kool et al., 2009.	Netherlands
Pork meat, organic, DK	Food	Materials	4.4	kg	2009	Kool et al., 2009.	UK
Pork meat, organic, frozen, at butcher, DE	Food	Materials	3.76	kg	2008	PROBAS database, 2008.	Germany
Pork meat, organic, NL	Food	Materials	5	kg	2009	Kool et al., 2009.	Germany
Pork meat, organic, UK	Food	Materials	4	kg	2009	Kool et al., 2009.	Denmark
Pork meat, outdoor, organic, UK	Food	Materials	9.9	kg	2009	DEFRA, 2009.	UK
Pork meat, South, AU	Food	Materials	3.6	kg	2010	Wiedemann et al., 2010.	Australia
Pork meat, UK	Food	Materials	5.72	kg	2006	Williams et al., 2006.	UK
Pork neck, DK	Food	Materials	3.29	kg	2003	Nielsen et al, 2003.	Denmark
Pork tenderloin, DK	Food	Materials	3.25	kg	2003	Nielsen et al, 2003.	Denmark
Potato chips, frozen, conventional, DE	Food	Materials	5.58	kg	2008	PROBAS database, 2008.	Germany
Potato chips, frozen, organic, DE	Food	Materials	5.42	kg	2008	PROBAS database,	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
						2008.	
Potato crisps (Walkers)	Food	Materials	2.32	kg	2009	Walkers	UK
Potato powder, for mashed potatoes	Food	Materials	1.12	kg	2004	Wallén et al., 2004.	Sweden
Potato products (crisps)	Food	Materials	2.37	kg	2004	Wallén et al., 2004.	Sweden
Potato products, frozen	Food	Materials	0.57	kg	2004	Wallén et al., 2004.	Sweden
Potato starch, DE	Food	Materials	0.988	kg	2008	PROBAS database, 2008.	Germany
Potato starch, NL	Food	Materials	1.015	kg	2009	Broekema and Blonk, 2009.	Netherlands
Potato starch/potato flour, DK	Food	Materials	0.731	kg	2003	Nielsen et al, 2003.	Denmark
Potatoes (1st early crop), conventional, UK	Food	Materials	0.29	kg	2006	Williams et al., 2006.	UK
Potatoes (1st early crop), organic, UK	Food	Materials	0.25	kg	2006	Williams et al., 2006.	UK
Potatoes (2), conventional, DE	Food	Materials	0.093	kg	2008	PROBAS database, 2008.	Germany
Potatoes (2nd early crop), conventional, UK	Food	Materials	0.14	kg	2006	Williams et al., 2006.	UK
Potatoes (2nd early crop), organic, UK	Food	Materials	0.18	kg	2006	Williams et al., 2006.	UK
Potatoes (main crop), conventional, UK	Food	Materials	0.17	kg	2006	Williams et al., 2006.	UK
Potatoes (main crop), organic, UK	Food	Materials	0.21	kg	2006	Williams et al., 2006.	UK
Potatoes, before packing, organic, UK	Food	Materials	0.12	kg	2009	DEFRA, 2009.	UK
Potatoes, before packing, UK	Food	Materials	0.16	kg	2009	DEFRA, 2009.	UK
Potatoes, conventional, DK	Food	Materials	0.157	kg	2003	Nielsen et al, 2003.	Denmark
Potatoes, conventional, IE	Food	Materials	0.14	kg	2010	D' Arcy et al., 2010.	Ireland
Potatoes, for potato chips processing, UK	Food	Materials	0.13	kg	2009	DEFRA, 2009.	UK
Potatoes, IN	Food	Materials	0.132	kg	2010	Pathak et al., 2010	India
Potatoes, King Edward variety (Tesco), 2.5 kg bag	Food	Materials	0.64	kg	2009	Tesco	UK
Potatoes, mixed basket, UK	Food	Materials	0.2	kg	2006	Williams et al., 2006.	UK
Potatoes, new, Anglian variety (Tesco), 2.5 kg bag	Food	Materials	0.56	kg	2009	Tesco	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Potatoes, new, baby (Tesco), organic, 750 g bag	Food	Materials	0.56	kg	2009	Tesco	UK
Potatoes, new, organic (Tesco), 1.5 kg bag	Food	Materials	0.64	kg	2009	Tesco	UK
Potatoes, organic, DE	Food	Materials	0.032	kg	2008	PROBAS database, 2008.	Germany
Potatoes, organic, IE	Food	Materials	0.27	kg	2010	D' Arcy et al., 2010.	Ireland
Potatoes, unprocessed	Food	Materials	0.17	kg	2004	Wallén et al., 2004.	Sweden
Poultry meat and bones, unprocessed	Food	Materials	2.81	kg	2004	Wallén et al., 2004.	Sweden
Poultry meat, EU	Food	Materials	3.6	kg	2008	Weidema et al., 2008.	EU
Prawns, polyculture system, PH	Food	Materials	5.108	kg	2008	Baruthio et al., 2008.	Phillipines
Pulses	Food	Materials	0.64	kg	2004	Wallén et al., 2004.	Sweden
Pulses, IN	Food	Materials	0.2079	kg	2010	Pathak et al., 2010	India
Rice	Food	Materials	1.68	kg	2004	Wallén et al., 2004.	Sweden
Rice (basmati), IN	Food	Materials	0.8589	kg	2010	Pathak et al., 2010	India
Rice (brown)	Food	Materials	1.375	kg	2009	Broekema and Blonk, 2009.	Netherlands
Rice (ordinary), IN	Food	Materials	0.7119	kg	2010	Pathak et al., 2010	India
Rice, domestic consumption, IT	Food	Materials	2.76	kg	2009	Blengini and Busto, 2009.	Italy
Rice, exported, IT	Food	Materials	2.88	kg	2009	Blengini and Busto, 2009.	Italy
Rice, JP	Food	Materials	1.925	kg	2010	Yoshikawa et al., 2010	Japan
Rice, organic, exported, IT	Food	Materials	3.25	kg	2009	Blengini and Busto, 2009.	Italy
Rice, parboiled, exported, IT	Food	Materials	2.97	kg	2009	Blengini and Busto, 2009.	Italy
Rice, TH	Food	Materials	2.93	kg	2009	Kasmaprapruet et al., 2009.	TH
Rock fish, offshore lining, ES	Food	Materials	5.488	kg	2010	Iribarren et al., 2010.	Spain
Root crops	Food	Materials	0.5	kg	2004	Wallén et al., 2004.	Sweden
Rye flour, conventional, DE	Food	Materials	0.527	kg	2008	PROBAS database, 2008.	Germany
Rye flour, DK	Food	Materials	0.875	kg	2003	Nielsen et al, 2003.	Denmark
Rye flour, organic, DE	Food	Materials	0.325	kg	2008	PROBAS database,	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
						2008.	
Rye, conventional, DE	Food	Materials	0.416	kg	2008	PROBAS database, 2008.	Germany
Rye, conventional, DK	Food	Materials	0.716	kg	2003	Nielsen et al, 2003.	Denmark
Rye, integrated cultivation, DE	Food	Materials	0.33	kg	2008	PROBAS database, 2008.	Germany
Rye, organic, DE	Food	Materials	0.239	kg	2008	PROBAS database, 2008.	Germany
Rye, organic, DK	Food	Materials	0.644	kg	2003	Nielsen et al, 2003.	Denmark
Salads, green	Food	Materials	3.3	kg	2004	Wallén et al., 2004.	Sweden
Salmon fillet, NO	Food	Materials	2.9	kg	2009	Ellingsen et al., 2009	Norway
Sambar, IN	Food	Materials	0.1993	kg	2010	Pathak et al., 2010	India
Sand eel, ex-harbour, DK	Food	Materials	0.167	kg	2003	Nielsen et al, 2003.	Denmark
Sausage (smoked), conventional, DE	Food	Materials	2.4	kg	2008	PROBAS database, 2008.	Germany
Sausage (smoked), organic, DE	Food	Materials	2.23	kg	2008	PROBAS database, 2008.	Germany
Sea bass, GR	Food	Materials	3.601	kg	2009	Aubin et al. 2009	Greece
Sea bass, IT	Food	Materials	9.356	kg	2010	Recchia et al., 2010.	Italy
Shark (blue), offshore lining, ES	Food	Materials	2.189	kg	2010	Iribarren et al., 2010.	Spain
Shark (mako), offshore lining, ES	Food	Materials	5.878	kg	2010	Iribarren et al., 2010.	Spain
Shellfish, processed	Food	Materials	2.01	kg	2004	Wallén et al., 2004.	Sweden
Shellfish, unprocessed	Food	Materials	2.59	kg	2004	Wallén et al., 2004.	Sweden
Shortbread (Mey Selections), large box	Food	Materials	13	kg	2009	Mey Selections	UK
Shortbread (Mey Selections), small box	Food	Materials	3.25	kg	2009	Mey Selections	UK
Shrimp/prawn, ex-harbour, DK	Food	Materials	2.649	kg	2003	Nielsen et al, 2003.	Denmark
Shrimps, artisanal fisheries, SN	Food	Materials	7.8	kg	2008	Emanuelsson et al, 2008.	Senegal
Shrimps, peeled and frozen, DK	Food	Materials	10.1	kg	2003	Nielsen et al, 2003.	Denmark
Shrimps, trawl fishery, SN	Food	Materials	38	kg	2008	Emanuelsson et al, 2008.	Senegal
Soft drink (Coke Zero), 2 l plastic bottle	Food	Materials	0.200	kg	2009	Coca Cola Co.	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Soft drink (Coke Zero), 500 ml plastic bottle	Food	Materials	0.440	kg	2009	Coca Cola Co.	UK
Soft drink (Coke Zero), can	Food	Materials	0.455	kg	2009	Coca Cola Co.	UK
Soft drink (Coke Zero), glass bottle	Food	Materials	1.030	kg	2009	Coca Cola Co.	UK
Soft drink (Coke), 2l plastic bottle	Food	Materials	0.25	kg	2009	Coca Cola Co.	UK
Soft drink (Coke), 500 ml plastic bottle	Food	Materials	0.48	kg	2009	Coca Cola Co.	UK
Soft drink (Coke), can	Food	Materials	0.515	kg	2009	Coca Cola Co.	UK
Soft drink (Coke), glas bottle	Food	Materials	1.091	kg	2009	Coca Cola Co.	UK
Soft drink (Diet Coke), 2l plastic bottle	Food	Materials	0.200	kg	2009	Coca Cola Co.	UK
Soft drink (Diet Coke), 500 ml plastic bottle	Food	Materials	0.440	kg	2009	Coca Cola Co.	UK
Soft drink (Diet Coke), can	Food	Materials	0.455	kg	2009	Coca Cola Co.	UK
Soft drink (Diet Coke), glass bottle	Food	Materials	1.030	kg	2009	Coca Cola Co.	UK
Soft drink (Oasis), summer fruits flavour, glass bottle	Food	Materials	0.91	kg	2009	Coca Cola Co.	UK
Soft drink (Oasis), summer fruits flavour, plastic bottle	Food	Materials	0.48	kg	2009	Coca Cola Co.	UK
Soft drinks	Food	Materials	0.56	kg	2004	Wallén et al., 2004.	Sweden
Soya protein	Food	Materials	0.95	kg	2009	Broekema and Blonk, 2009.	Netherlands
Soya protein, rehydrated	Food	Materials	0.34	kg	2009	Broekema and Blonk, 2009.	Netherlands
Soya protein, rehydrated, organic	Food	Materials	0.32	kg	2009	Broekema and Blonk, 2009.	Netherlands
Soybeans	Food	Materials	1.125	kg	2009	Broekema and Blonk, 2009.	Netherlands
Soybeans, AR	Food	Materials	0.642	kg	2008	Dalgaard et al., 2008.	Argentina
Soybeans, conventional, DK	Food	Materials	0.618	kg	2003	Nielsen et al, 2003.	Denmark
Soybeans, conventional, US	Food	Materials	0.109	kg	2008	PROBAS database, 2008.	USA
Soybeans, organic	Food	Materials	0.94	kg	2009	Broekema and Blonk, 2009.	Netherlands
Spelt, organic	Food	Materials	0.445	kg	2009	Broekema and Blonk, 2009.	Netherlands
Spices and salt	Food	Materials	0.3	kg	2004	Wallén et al., 2004.	Sweden

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Splendid alfonsino, offshore lining, ES	Food	Materials	2.775	kg	2010	Iribarren et al., 2010.	Spain
Strawberries (in season), UK	Food	Materials	0.99	kg	2008	Williams et al., 2008.	UK
Strawberries, conventional, EU	Food	Materials	0.261	kg	2008	PROBAS database, 2008.	EU
Strawberries, conventional, greenhouse, NL	Food	Materials	4.889	kg	2009	Blonk et al., 2009.	Netherlands
Strawberries, cultivated in frames, NL	Food	Materials	2.431	kg	2009	Blonk et al., 2009.	Netherlands
Strawberries, cultivated in open fields, NL	Food	Materials	0.875	kg	2009	Blonk et al., 2009.	Netherlands
Strawberries, ES	Food	Materials	0.91	kg	2008	Williams et al., 2008.	Spain
Strawberries, Huelva, ES	Food	Materials	0.364	kg	2010	Denstedt et al., 2010.	Spain
Sugar (from cane), granulated, packed	Food	Materials	0.87	kg	2009	DEFRA, 2009.	UK
Sugar (Tate & Lyle), from sugar cane, for industrial supply	Food	Materials	0.3	kg	2008	Tate & Lyle.	UK
Sugar (Tate & Lyle), from sugar cane, for retail	Food	Materials	0.38	kg	2008	Tate & Lyle.	UK
Sugar, from sugar beet, conventional, DE	Food	Materials	1.37	kg	2008	PROBAS database, 2008.	Germany
Sugar, from sugar beet, organic, DE	Food	Materials	1.19	kg	2008	PROBAS database, 2008.	Germany
Sugar, from sugar cane, raw, AU	Food	Materials	0.598	kg	2006	Renouf, 2006.	Australia
Sugar, honey and treacle	Food	Materials	4.18	kg	2004	Wallén et al., 2004.	Sweden
Sugar, white, granulated, from sugar beets (Silver Spoon), UK	Food	Materials	0.6	kg	2008	British Sugar	UK
Sunflower seeds, CL	Food	Materials	0.89	kg	2010	Iriarte et al., 2010	Chile
Sunflower seeds, conventional, DE	Food	Materials	0.021	MJ	2008	PROBAS database, 2008.	Germany
Sunflower seeds, organic, DE	Food	Materials	1.35E-02	MJ	2008	PROBAS database, 2008.	Germany
Swordfish, offshore lining, ES	Food	Materials	9.274	kg	2010	Iribarren et al., 2010.	Spain
Tea bags	Food	Materials	4.1	kg	2009	DEFRA, 2009.	UK
Tea, green leaves	Food	Materials	0.87	kg	2009	DEFRA, 2009.	Kenya
Thai chicken pizza, packed ready-made meal	Food	Materials	4.62	kg	2009	DEFRA, 2009.	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Thickener	Food	Materials	0.605	kg	2009	Broekema and Blonk, 2009.	Netherlands
Tofu	Food	Materials	2.065	kg	2009	Broekema and Blonk, 2009.	Netherlands
Tofu (Albert Heijn)	Food	Materials	2.15	kg	2009	Broekema and Blonk, 2009.	Netherlands
Tofu (Provamel)	Food	Materials	2	kg	2009	Broekema and Blonk, 2009.	Netherlands
Tomato (cherry), IT	Food	Materials	1.2145	kg	2010	Cellura et al., 2010.	Italy
Tomatoes	Food	Materials	3.29	kg	2004	Wallén et al., 2004.	Sweden
Tomatoes (1), conventional, UK	Food	Materials	9.093	kg	2006	Williams et al., 2006.	UK
Tomatoes (1), organic, NL	Food	Materials	1.245	kg	2009	Broekema and Blonk, 2009.	Netherlands
Tomatoes (2), conventional, UK	Food	Materials	9.148	kg	2006	Williams et al., 2006.	UK
Tomatoes (2), organic, NL	Food	Materials	2.153	kg	2009	Blonk et al., 2009.	Netherlands
Tomatoes (baby plum), ES	Food	Materials	3.1	kg	2008	Williams et al., 2008.	Spain
Tomatoes (baby plum), UK	Food	Materials	5.9	kg	2008	Williams et al., 2008.	UK
Tomatoes (clasic loose), ES	Food	Materials	0.74	kg	2008	Williams et al., 2008.	Spain
Tomatoes (clasic loose), UK	Food	Materials	2.2	kg	2008	Williams et al., 2008.	UK
Tomatoes (classic vine), ES	Food	Materials	1	kg	2008	Williams et al., 2008.	Spain
Tomatoes (classic vine), UK	Food	Materials	5.1	kg	2008	Williams et al., 2008.	UK
Tomatoes, conventional, NL	Food	Materials	1.736	kg	2009	Blonk et al., 2009.	Netherlands
Tomatoes, conventional, DE	Food	Materials	0.201	kg	2008	PROBAS database, 2008.	Germany
Tomatoes, conventional, ES	Food	Materials	1.8	kg	2009	DEFRA, 2009.	Spain
Tomatoes, conventional, EU	Food	Materials	0.199	kg	2008	PROBAS database, 2008.	EU
Tomatoes, conventional, heated greenhouse, NL	Food	Materials	1.069	kg	2009	Blonk et al., 2009.	Netherlands
Tomatoes, conventional, oil heated, UK	Food	Materials	2.3	kg	2009	DEFRA, 2009.	UK
Tomatoes, conventional, waste heated, UK	Food	Materials	0.39	kg	2009	DEFRA, 2009.	UK
Tomatoes, ES	Food	Materials	1.014	kg	2009	Blonk et al., 2009.	Spain

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Tomatoes, generic, DE	Food	Materials	0.206	kg	2008	PROBAS database, 2008.	EU
Tomatoes, greenhouse, ES	Food	Materials	0.144	kg	2010	Pascual et al., 2010.	Spain
Tomatoes, IT	Food	Materials	0.8769	kg	2010	Cellura et al., 2010.	Italy
Tomatoes, open field, ES	Food	Materials	0.142	kg	2010	Pascual et al., 2010.	Spain
Tomatoes, organic, DE	Food	Materials	0.169	kg	2008	PROBAS database, 2008.	Germany
Tomatoes, organic, UK	Food	Materials	17.407	kg	2006	Williams et al., 2006.	UK
Triticale, conventional, DE	Food	Materials	0.409	kg	2008	PROBAS database, 2008.	Germany
Triticale, integrated cultivation, DE	Food	Materials	0.365	kg	2008	PROBAS database, 2008.	Germany
Triticale, organic, DE	Food	Materials	0.256	kg	2008	PROBAS database, 2008.	Germany
Trout (rainbow), FR	Food	Materials	2.753	kg	2009	Aubin et al. 2009	France
Trout (rainbow), large, FR	Food	Materials	2.125	kg	2003	Papatryphon et al., 2004	France
Trout (rainbow), small, FR	Food	Materials	1.805	kg	2003	Papatryphon et al., 2003	France
Trout (rainbow), very large, FR	Food	Materials	2.595	kg	2003	Papatryphon et al., 2005	France
Trout, from trout pond farm, DK	Food	Materials	1.79	kg	2003	Nielsen et al, 2003.	Denmark
Trout, frozen, DK	Food	Materials	4.09	kg	2003	Nielsen et al, 2003.	Denmark
Tuna (bigeye), offshore lining, ES	Food	Materials	13.260	kg	2010	Iribarren et al., 2010.	Spain
Tuna, deep-sea seining in Atlantic Ocean	Food	Materials	1.406	kg	2010	Iribarren et al., 2010.	Spain
Tuna, deep-sea seining in Indian Ocean	Food	Materials	1.205	kg	2010	Iribarren et al., 2010.	Spain
Tuna, deep-sea seining in Pacific Ocean	Food	Materials	1.701	kg	2010	Iribarren et al., 2010.	Spain
Tuna, ES	Food	Materials	1.8	kg	2005	Hospido and Tyedmers, 2005.	Spain
Turbot, aquaculture, ES	Food	Materials	19.4	kg	2010	Iribarren et al., 2010.	Spain
Turbot, FR	Food	Materials	6.017	kg	2009	Aubin et al. 2009	France
Vegetable juice, DE	Food	Materials	1.17	kg	2008	PROBAS database, 2008.	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Vegetable oil (rapeseed), conventional, DE	Food	Materials	1.07	kg	2008	PROBAS database, 2008.	Germany
Vegetable oil (rapeseed), conventional, DK	Food	Materials	2.568	kg	2003	Nielsen et al, 2003.	Denmark
Vegetable oil (rapeseed), organic, DE	Food	Materials	0.41	kg	2008	PROBAS database, 2008.	Germany
Vegetable oil (soybeans)	Food	Materials	2.62	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetable oil (soybeans), AR	Food	Materials	1.819	kg	2008	Dalgaard et al., 2008.	Argentina
Vegetable oil (soybeans), conventional, DE	Food	Materials	0.836	kg	2008	PROBAS database, 2008.	Germany
Vegetable oil (sunflower seeds), conventional, DE	Food	Materials	0.758	kg	2008	PROBAS database, 2008.	Germany
Vegetable oil (sunflower seeds), NL	Food	Materials	1.47	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetable oil (sunflower seeds), organic, DE	Food	Materials	0.556	kg	2008	PROBAS database, 2008.	Germany
Vegetable oil (sunflower seeds), organic, NL	Food	Materials	3.04	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetable oil, conventional, DE	Food	Materials	0.882	kg	2008	PROBAS database, 2008.	Germany
Vegetable oil, NL	Food	Materials	1.895	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetable oil, organic, DE	Food	Materials	0.519	kg	2008	PROBAS database, 2008.	Germany
Vegetable oils, for cooking	Food	Materials	3.53	kg	2004	Wallén et al., 2004.	Sweden
Vegetable patties (Vivera Vega)	Food	Materials	2.15	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetables, conventional, frozen, DE	Food	Materials	0.238	kg	2008	PROBAS database, 2008.	Germany
Vegetables, conventional, preserved, DE	Food	Materials	0.378	kg	2008	PROBAS database, 2008.	Germany
Vegetables, EU average	Food	Materials	0.036	kg	2008	PROBAS database, 2008.	EU
Vegetables, fresh	Food	Materials	3.29	kg	2004	Wallén et al., 2004.	Sweden
Vegetables, generic	Food	Materials	0.0374	kg	2008	PROBAS database, 2008.	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Vegetables, organic, frozen, DE	Food	Materials	0.201	kg	2008	PROBAS database, 2008.	Germany
Vegetables, organic, preserved, DE	Food	Materials	0.345	kg	2008	PROBAS database, 2008.	Germany
Vegetables, processed	Food	Materials	0.3	kg	2004	Wallén et al., 2004.	Sweden
Vegetarian bread-coated fillets (Alpro Soya)	Food	Materials	1.43	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetarian dumplings (Albert Heijn, Tivall)	Food	Materials	2.05	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetarian dumplings, mediterranean style (Soto)	Food	Materials	2.51	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetarian grilled pieces (Albert Heijn, Tivall)	Food	Materials	2.15	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetarian mince (Healthy Planet)	Food	Materials	1.74	kg	2009	Broekema and Blonk, 2009.	Netherlands
Vegetarian smoked sausage	Food	Materials	1.43	kg	2009	Broekema and Blonk, 2009.	Netherlands
Veggie burger (Albert Heijn), organic	Food	Materials	2.1	kg	2009	Broekema and Blonk, 2009.	Netherlands
Water (Highland Spring), bottled, UK	Food	Materials	0.176	kg	2007	Highland Spring Limited	UK
Wheat (durum), IT	Food	Materials	0.8	kg	2010	Ruini and Marino, 2010.	Italy
Wheat (spring), for bread, extensive, UK	Food	Materials	0.4	kg	2009	DEFRA, 2009.	UK
Wheat (winter), conventional, DE	Food	Materials	0.333	kg	2008	PROBAS database, 2008.	Germany
Wheat (winter), for bread, conventional, UK	Food	Materials	0.64	kg	2009	DEFRA, 2009.	UK
Wheat flour, conventional, DE	Food	Materials	0.566	kg	2008	PROBAS database, 2008.	Germany
Wheat flour, DK	Food	Materials	1.01	kg	2003	Nielsen et al, 2003.	Denmark
Wheat flour, NL	Food	Materials	0.625	kg	2009	Broekema and Blonk, 2009.	Netherlands
Wheat flour, organic, DE	Food	Materials	0.399	kg	2008	PROBAS database, 2008.	Germany
Wheat gluten	Food	Materials	2.925	kg	2009	Broekema and Blonk, 2009.	Netherlands

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Wheat protein	Food	Materials	1.19	kg	2009	Broekema and Blonk, 2009.	Netherlands
Wheat protein, organic	Food	Materials	1.11	kg	2009	Broekema and Blonk, 2009.	Netherlands
Wheat starch	Food	Materials	1.065	kg	2009	Broekema and Blonk, 2009.	Netherlands
Wheat, conventional, DE	Food	Materials	0.402	kg	2008	PROBAS database, 2008.	Germany
Wheat, conventional, DK	Food	Materials	0.708	kg	2003	Nielsen et al, 2003.	Denmark
Wheat, for bread, organic, UK	Food	Materials	0.75	kg	2009	DEFRA, 2009.	UK
Wheat, integrated cultivation, DE	Food	Materials	0.401	kg	2008	PROBAS database, 2008.	Germany
Wheat, organic, DE	Food	Materials	0.272	kg	2008	PROBAS database, 2008.	Germany
Wheat, organic, DK	Food	Materials	0.369	kg	2003	Nielsen et al, 2003.	Denmark
Wheat, organic, NL	Food	Materials	0.575	kg	2009	Broekema and Blonk, 2009.	Netherlands
Whiting (blue), coastal trawling, ES	Food	Materials	0.956	kg	2010	Iribarren et al., 2010.	Spain
Wine (red), IT	Food	Materials	0.58728	l	2010	Notarnicola et al., 2010	Italy
Wine (red), reverse osmosis, IT	Food	Materials	0.6048	l	2010	Notarnicola et al., 2010	Italy
Wine, CA	Food	Materials	5.27	kg	2006	Point, 2008.	Canada
Wine, organic, IT	Food	Materials	1.03	kg	2006	Petti et al., 2006.	France
Yeast	Food	Materials	0.96	kg	2009	Broekema and Blonk, 2009.	Netherlands
Yogurt, conventional, DE	Food	Materials	1.13	kg	2008	PROBAS database, 2008.	Germany
Yogurt, organic, DE	Food	Materials	1.06	kg	2008	PROBAS database, 2008.	Germany
Zucchini, IT	Food	Materials	1.7992	kg	2010	Cellura et al., 2010.	Italy
Barley (winter), for feed, UK	Agriculture	Materials	0.46	kg	2009	DEFRA, 2009.	UK
Beans (field), for feed, conventional, DE	Agriculture	Materials	0.351	kg	2008	PROBAS database, 2008.	Germany
Beans (field), for feed, conventional, UK	Agriculture	Materials	0.72	kg	2006	Williams et al., 2006.	UK
Beans (field), for feed, integrated cultivation, DE	Agriculture	Materials	0.412	kg	2008	PROBAS database, 2008.	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Beans (field), for feed, organic, DE	Agriculture	Materials	0.569	kg	2008	PROBAS database, 2008.	Germany
Beef cattle (suckler), agri-environment scheme (1), IE	Agriculture	Materials	11.94	kg	2006	Casey and Holden, 2006.	Ireland
Beef cattle (suckler), agri-environment scheme (2), IE	Agriculture	Materials	12.54	kg	2006	Casey and Holden, 2006.	Ireland
Beef cattle (suckler), conventional (1), IE	Agriculture	Materials	12.66	kg	2006	Casey and Holden, 2006.	Ireland
Beef cattle (suckler), conventional (2), IE	Agriculture	Materials	13.33	kg	2006	Casey and Holden, 2006.	Ireland
Beef cattle (suckler), organic (1), IE	Agriculture	Materials	10.46	kg	2006	Casey and Holden, 2006.	Ireland
Beef cattle (suckler), organic (2), IE	Agriculture	Materials	11.71	kg	2006	Casey and Holden, 2006.	Ireland
Beef cattle, backgrounding/feedlot, upper Midwestern region, US	Agriculture	Materials	16.2	kg	2010	Pelletier et al, 2010	USA
Beef cattle, CA	Agriculture	Materials	10.37	kg	2001	Vergé et al., 2008.	Canada
Beef cattle, feedlot, upper Midwestern region, US	Agriculture	Materials	14.8	kg	2010	Pelletier et al, 2010	USA
Beef cattle, pasture, upper Midwestern region, US	Agriculture	Materials	19.2	kg	2010	Pelletier et al, 2010	USA
Cattle, at farm, DK	Agriculture	Materials	11.6	kg	2003	Nielsen et al, 2003.	Denmark
Cattle, at farm, UK	Agriculture	Materials	8.5	kg	2006	Williams et al., 2006.	UK
Chicken (broiler), at farm, DK	Agriculture	Materials	1.88	kg	2003	Nielsen et al, 2003.	Denmark
Chicken (broiler), CA	Agriculture	Materials	1.00	kg	2009	Vergé et al., 2009.	Canada
Chicken (broiler), conventional, at farm, UK	Agriculture	Materials	2.91	kg	2006	Williams et al., 2006.	UK
Chicken (broiler), conventional, DE	Agriculture	Materials	1.32	kg	2008	PROBAS database, 2008.	Germany
Chicken (broiler), free range, UK	Agriculture	Materials	3.65	kg	2006	Williams et al., 2006.	UK
Chicken (broiler), organic, DE	Agriculture	Materials	1.13	kg	2008	PROBAS database, 2008.	Germany
Chicken (broiler), US	Agriculture	Materials	1.395	kg	2009	Pelletier, 2008.	USA
Clover seed, DK	Agriculture	Materials	7.22	kg	2003	Nielsen et al, 2003.	Denmark
Clover silage, conventional, DE	Agriculture	Materials	0.123	kg	2008	PROBAS database,	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Clover silage, organic, DE	Agriculture	Materials	0.101	kg	2008	2008. PROBAS database, 2008.	Germany
Cotton, conventional, CN	Agriculture	Materials	1.85	kg	2008	PROBAS database, 2008.	China
Cotton, conventional, US	Agriculture	Materials	2.61	kg	2008	PROBAS database, 2008.	USA
Cotton, organic, PE	Agriculture	Materials	0.136	kg	2008	PROBAS database, 2008.	Peru
Feed for broiler chicken (1), conventional, DE	Agriculture	Materials	0.458	kg	2008	PROBAS database, 2008.	Germany
Feed for broiler chicken (2), conventional, DE	Agriculture	Materials	0.378	kg	2008	PROBAS database, 2008.	Germany
Feed for bulls (1), conventional, DE	Agriculture	Materials	0.136	kg	2008	PROBAS database, 2008.	Germany
Feed for bulls (2), conventional, DE	Agriculture	Materials	0.173	kg	2008	PROBAS database, 2008.	Germany
Feed for calves, conventional, DE	Agriculture	Materials	0.999	kg	2008	PROBAS database, 2008.	Germany
Feed for calves, organic, DE	Agriculture	Materials	0.156	kg	2008	PROBAS database, 2008.	Germany
Feed for chicken (1), BR	Agriculture	Materials	0.739	kg	2010	Freitas de Alvarenga et al., 2010	Brazil
Feed for chicken (2), BR	Agriculture	Materials	0.575	kg	2010	Freitas de Alvarenga et al., 2010	Brazil
Feed for chicken (3), BR	Agriculture	Materials	0.676	kg	2010	Freitas de Alvarenga et al., 2010	Brazil
Feed for chicken (4), BR	Agriculture	Materials	0.512	kg	2010	Freitas de Alvarenga et al., 2010	Brazil
Feed for dairy cows, rapeseed meal (1)	Agriculture	Materials	0.529	kg	2009	Lehuger et al., 2009.	France
Feed for dairy cows, rapeseed meal (2)	Agriculture	Materials	0.411	kg	2009	Lehuger et al., 2009.	France
Feed for dairy cows, rapeseed meal and maize silage	Agriculture	Materials	0.471	kg	2009	Lehuger et al., 2009.	France
Feed for dairy cows, soybean meal and maize silage	Agriculture	Materials	0.391	kg	2009	Lehuger et al., 2009.	France

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Feed for oxen, organic, DE	Agriculture	Materials	0.0995	kg	2008	PROBAS database, 2008.	Germany
Feed for piglets, conventional, DE	Agriculture	Materials	0.382	kg	2008	PROBAS database, 2008.	Germany
Feed for piglets, organic, DE	Agriculture	Materials	0.286	kg	2008	PROBAS database, 2008.	Germany
Feed for pigs (1), conventional, DE	Agriculture	Materials	0.491	kg	2009	Kool et al., 2009.	Germany
Feed for pigs (1), organic, DE	Agriculture	Materials	0.388	kg	2009	Kool et al., 2009.	Germany
Feed for pigs (2), conventional, DE	Agriculture	Materials	0.401	kg	2008	PROBAS database, 2008.	Germany
Feed for pigs (2), organic, DE	Agriculture	Materials	0.319	kg	2008	PROBAS database, 2008.	Germany
Feed for pigs, conventional, DK	Agriculture	Materials	0.521	kg	2009	Kool et al., 2009.	Denmark
Feed for pigs, conventional, NL	Agriculture	Materials	0.505	kg	2009	Kool et al., 2009.	Netherlands
Feed for pigs, conventional, UK	Agriculture	Materials	0.52	kg	2009	Kool et al., 2009.	UK
Feed for pigs, integrated agricultural practices, DE	Agriculture	Materials	0.436	kg	2008	PROBAS database, 2008.	Germany
Feed for pigs, organic, DK	Agriculture	Materials	0.413	kg	2009	Kool et al., 2009.	Denmark
Feed for pigs, organic, NL	Agriculture	Materials	0.465	kg	2009	Kool et al., 2009.	Netherlands
Feed for pigs, organic, UK	Agriculture	Materials	0.412	kg	2009	Kool et al., 2009.	UK
Feed for sows, conventional, DE	Agriculture	Materials	0.391	kg	2008	PROBAS database, 2008.	Germany
Feed for sows, organic, DE	Agriculture	Materials	0.263	kg	2008	PROBAS database, 2008.	Germany
Feed for young cattle, organic, DE	Agriculture	Materials	0.0859	kg	2008	PROBAS database, 2008.	Germany
Forage, extensive, DE	Agriculture	Materials	0.0833	kg	2008	PROBAS database, 2008.	Germany
Grass (permanent), extensive, UK	Agriculture	Materials	0.16	kg	2009	DEFRA (2009)	UK
Grass (permanent), NZ	Agriculture	Materials	0.03	kg	2009	DEFRA (2009)	New Zealand
Grass (permanent), organic, UK	Agriculture	Materials	0.067	kg	2009	DEFRA (2009)	UK
Grass seed, DK	Agriculture	Materials	2.66	kg	2003	Nielsen et al, 2003.	Denmark
Grass silage, 10-year ley, extensive,	Agriculture	Materials	0.25	kg	2009	DEFRA (2009)	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
UK							
Grass silage, 3-year clover ley, organic, UK	Agriculture	Materials	0.12	kg	2009	DEFRA (2009)	UK
Grass silage, 5-year ley, intensive, UK	Agriculture	Materials	0.25	kg	2009	DEFRA (2009)	UK
Grass silage, conventional, DE	Agriculture	Materials	0.0913	kg	2008	PROBAS database, 2008.	Germany
Grass, 5-year ley, intensive, UK	Agriculture	Materials	0.22	kg	2009	DEFRA (2009)	UK
Grassland, DE	Agriculture	Materials	0.0641	kg	2008	PROBAS database, 2008.	Germany
Hard wood, DE	Agriculture	Materials	0.0065	kg	2008	PROBAS database, 2008.	Germany
Hay, conventional, DE	Agriculture	Materials	0.143	kg	2008	PROBAS database, 2008.	Germany
Hay, organic, DE	Agriculture	Materials	0.05	kg	2008	PROBAS database, 2008.	Germany
Heifers, conventional, DE	Agriculture	Materials	6.6	kg	2008	PROBAS database, 2008.	Germany
Heifers, organic, DE	Agriculture	Materials	3.23	kg	2008	PROBAS database, 2008.	Germany
Lamb, at farm, UK	Agriculture	Materials	6.92	kg	2006	Williams et al., 2006.	UK
Lavender essential oil, FR	Agriculture	Materials	1.927	kg	2010	Zavaglia et al., 2010.	France
Maize silage, conventional, DE	Agriculture	Materials	0.166	kg	2008	PROBAS database, 2008.	Germany
Maize silage, conventional, UK	Agriculture	Materials	0.48	kg	2006	Williams et al., 2006.	UK
Maize silage, organic, DE	Agriculture	Materials	0.0785	kg	2008	PROBAS database, 2008.	Germany
Maize silage, organic, UK	Agriculture	Materials	0.44	kg	2006	Williams et al., 2006.	UK
Maize silage, UK	Agriculture	Materials	0.18	kg	2009	DEFRA, 2009.	UK
Maize, for feed, conventional, DE	Agriculture	Materials	0.53	kg	2008	PROBAS database, 2008.	Germany
Maize, for feed, conventional, UK	Agriculture	Materials	0.49	kg	2006	Williams et al., 2006.	UK
Maize, for feed, organic, UK	Agriculture	Materials	0.55	kg	2006	Williams et al., 2006.	UK
Peas, for feed, conventional, DE	Agriculture	Materials	0.375	kg	2008	PROBAS database, 2008.	Germany
Peas, for feed, integrated cultivation,	Agriculture	Materials	0.434	kg	2008	PROBAS database,	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
DE						2008.	
Peas, for feed, organic, DE	Agriculture	Materials	0.486	kg	2008	PROBAS database, 2008.	Germany
Pig, at farm, DK	Agriculture	Materials	2.43	kg	2003	Nielsen et al, 2003.	Denmark
Pig, conventional, DE	Agriculture	Materials	1.86	kg	2008	PROBAS database, 2008.	Germany
Pig, organic, DE	Agriculture	Materials	1.75	kg	2008	PROBAS database, 2008.	Germany
Piglets, conventional, DE	Agriculture	Materials	3	kg	2008	PROBAS database, 2008.	Germany
Piglets, organic, at farm, DE	Agriculture	Materials	1.77	kg	2008	PROBAS database, 2008.	Germany
Pigs, CA	Agriculture	Materials	2.31	kg	2009	Vergé et al., 2009.	Canada
Pigs, fattening farms, NL	Agriculture	Materials	5.3	kg	2010	Dolman et al., 2010	Netherlands
Pigs, high profitability, US	Agriculture	Materials	2.47	kg	2010	Pelletier et al, 2010	USA
Pigs, low profitability, US	Agriculture	Materials	3.05	kg	2010	Pelletier et al, 2010	USA
Pigs, niche, high profitability, US	Agriculture	Materials	2.52	kg	2010	Pelletier et al, 2010	USA
Pigs, niche, low profitability, US	Agriculture	Materials	3.33	kg	2010	Pelletier et al, 2010	USA
Potatoes (1), conventional, DE	Agriculture	Materials	0.0618	kg	2008	PROBAS database, 2008.	Germany
Rapeseed meal (OSR), conventional, UK	Agriculture	Materials	0.7	kg	2009	DEFRA, 2009.	UK
Rapeseed meal (OSR), organic, UK	Agriculture	Materials	0.64	kg	2009	DEFRA, 2009.	UK
Rapeseed, CL	Agriculture	Materials	0.82	kg	2010	Iriarte et al., 2010	Chile
Rapeseed, conventional, DK	Agriculture	Materials	1.51	kg	2003	Nielsen et al, 2003.	Denmark
Rapeseed, organic, DK	Agriculture	Materials	1.29	kg	2003	Nielsen et al, 2003.	Denmark
Resinous wood, DE	Agriculture	Materials	0.00265	kg	2008	PROBAS database, 2008.	Germany
Sow and piglets, organic, DE	Agriculture	Materials	3.14	kg	2008	PROBAS database, 2008.	Germany
Sows and piglets, conventional, DE	Agriculture	Materials	8.6	kg	2008	PROBAS database, 2008.	Germany
Soy meal (compund), DK	Agriculture	Materials	0.203	kg	2003	Nielsen et al, 2003.	Denmark
Soybean meal, AR	Agriculture	Materials	0.726	kg	2008	Dalgaard et al., 2008.	Argentina
Soybeans, for feed, conventional	Agriculture	Materials	0.9	kg	2006	Williams et al., 2006.	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Soybeans, for feed, organic	Agriculture	Materials	1.03	kg	2006	Williams et al., 2006.	UK
Sugar beet, DK	Agriculture	Materials	0.0575	kg	2003	Nielsen et al, 2003.	Denmark
Sugar beet, organic, DE	Agriculture	Materials	0.0196	kg	2008	PROBAS database, 2008.	Germany
Sugar cane, BR	Agriculture	Materials	0.0459	kg	2008	PROBAS database, 2008.	Brazil
Sugar cane. ZM	Agriculture	Materials	0.05	kg	2009	DEFRA, 2009.	Zambia
Turkey, CA	Agriculture	Materials	1.44	kg	2009	Vergé et al., 2009.	Canada
Turnips (stubble), organic, UK	Agriculture	Materials	0.0043	kg	2009	DEFRA, 2009.	UK
Wheat (spring), for feed, extensive, UK	Agriculture	Materials	0.39	kg	2009	DEFRA, 2009.	UK
Wheat (winter), for feed, intensive, UK	Agriculture	Materials	0.55	kg	2009	DEFRA, 2009.	UK
Wheat straw, DE	Agriculture	Materials	0.323	kg	2008	PROBAS database, 2008.	Germany
Wheat, for feed, conventional, UK	Agriculture	Materials	0.64	kg	2006	Williams et al., 2006.	UK
Wheat, for feed, organic, UK	Agriculture	Materials	0.74	kg	2009	DEFRA, 2009.	UK
Wheat, for feed, organic, UK	Agriculture	Materials	0.68	kg	2006	Williams et al., 2006.	UK
LimeX	Agriculture	Materials	0.049	kg	2006	Mortimer et al. (2009)	UK
Farm yard manure/slurry	Agriculture	Materials	0.004	kg	2006	Mortimer, N., et al. (2009)	UK
Fertiliser, K	Agriculture	Materials	1.768	kg	2006	Mortimer, N., et al. (2009)	UK
Fertiliser, N	Agriculture	Materials	6.980	kg	2006	Mortimer, N., et al. (2009)	UK
Fertiliser, P	Agriculture	Materials	1.860	kg	2006	Mortimer, N., et al. (2009)	UK
Pesticides	Agriculture	Materials	5.375	kg	2006	Mortimer, N., et al. (2009)	UK
Sugar beet, seeds	Agriculture	Materials	2.123	kg	2006	Mortimer, N., et al. (2009)	UK
Wheat, seeds	Agriculture	Materials	0.249	kg	2006	Mortimer, N., et al. (2009)	UK
Agricultural lime	Agriculture	Materials	0.04900000	kg	2006	Mortimer, N. et al. (2009)	UK
Animal feed	Agriculture	Materials	0.49100000	kg	2006	Mortimer, N. et al. (2009)	UK

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
Animal feed (DDGS - wheat)	Agriculture	Materials	0.49100000	kg	2006	Mortimer, N. et al. (2009)	UK
Animal feed (Dried sugar beet pulp)	Agriculture	Materials	0.33700000	kg	2006	Mortimer, N. et al. (2009)	UK
Straw	Agriculture	Materials	0.00000000	kg	2006	Mortimer, N. et al. (2009)	UK
Sugar beet tops	Agriculture	Materials	0.00000000	kg	2006	Mortimer, N. et al. (2009)	UK

Appendix 3 – List of data sets in the Ecoinvent database

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
anthracite, burned in stove 5-15kW	Energy		1.07E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
blast furnace gas, burned in power plant	Energy		2.00E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
coke oven gas, at plant, DE	Energy		1.87E-02	MJ	1992	Ecoinvent data V2.2 (2010)	Germany
coke oven gas, at plant, Global	Energy		2.45E-02	MJ	1998	Ecoinvent data V2.2 (2010)	Global
coke oven gas, burned in power plant	Energy		7.51E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
cooling energy, natural gas, at cogen unit with absorption chiller 100 kW	Energy		5.71E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
diesel, burned in building machine	Energy		9.20E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Global
diesel, burned in chopper	Energy		9.85E-02	MJ	2002	Ecoinvent data V2.2 (2010)	Europe
diesel, burned in cogen 200kWe diesel SCR	Energy		9.34E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
diesel, burned in diesel-electric generating set	Energy		8.82E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Global
electricity mix, aluminium industry	Energy		9.31E-02	MJ	2002	Ecoinvent data V2.2 (2010)	Global
electricity mix, AT	Energy		1.08E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Austria
electricity mix, BA	Energy		1.84E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity mix, BE	Energy		9.18E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Belgium
electricity mix, BG	Energy		1.65E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bulgaria
electricity mix, BR	Energy		6.02E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Brazil
electricity mix, CH	Energy		3.48E-02	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity mix, CN	Energy		3.19E-01	MJ	2005	Ecoinvent data V2.2 (2010)	China
electricity mix, CZ	Energy		2.21E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity mix, DE	Energy		1.78E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Germany
electricity mix, DK	Energy		1.56E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Denmark
electricity mix, ES	Energy		1.39E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Spain
electricity mix, FI	Energy		1.22E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Finland
electricity mix, FR	Energy		2.49E-02	MJ	2004	Ecoinvent data V2.2 (2010)	France
electricity mix, GB	Energy		1.62E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United Kingdom
electricity mix, GR	Energy		2.71E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Greece
electricity mix, HR	Energy		1.30E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Croatia
electricity mix, HU	Energy		1.72E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Hungary

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity mix, IE		Energy	2.13E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Ireland
electricity mix, IT		Energy	1.58E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Italy
electricity mix, JP		Energy	1.48E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Japan
electricity mix, LU		Energy	1.56E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Luxembourg
electricity mix, MK		Energy	2.63E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Macedonia
electricity mix, NL		Energy	1.86E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Netherlands
electricity mix, NO		Energy	8.96E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Norway
electricity mix, PO		Energy	3.07E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Poland
electricity mix, PT		Energy	1.66E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Portugal
electricity mix, RO		Energy	1.82E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Romania
electricity mix, RS		Energy	2.42E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity mix, SBB		Energy	2.79E-03	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity mix, SE		Energy	2.30E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Sweden
electricity mix, SI		Energy	1.18E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovenia
electricity mix, SK		Energy	1.26E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovakia
electricity mix, USA		Energy	2.09E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United States
electricity, at cogen 160kWe Jakobsberg, allocation electricity		Energy	2.71E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 160kWe Jakobsberg, allocation energy		Energy	9.78E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 160kWe Jakobsberg, allocation exergy		Energy	2.06E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 160kWe Jakobsberg, allocation heat		Energy	2.24E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 160kWe Jakobsberg, allocation price		Energy	1.76E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 160kWe lambda=1, allocation electricity		Energy	2.29E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 160kWe lambda=1, allocation energy		Energy	8.48E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 160kWe lambda=1, allocation exergy		Energy	1.76E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 160kWe lambda=1, allocation heat		Energy	1.89E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, at cogen 160kWe lambda=1, allocation price	Energy		1.51E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 1MWe lean burn, allocation energy, CH	Energy		9.09E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 1MWe lean burn, allocation energy, Europe	Energy		9.03E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
electricity, at cogen 1MWe lean burn, allocation exergy, CH	Energy		1.66E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 1MWe lean burn, allocation exergy, Europe	Energy		1.65E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
electricity, at cogen 1MWe lean burn, allocation heat, CH	Energy		1.10E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 1MWe lean burn, allocation heat, Europe	Energy		1.10E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
electricity, at cogen 200kWe diesel SCR, allocation energy	Energy		1.15E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 200kWe diesel SCR, allocation exergy	Energy		2.04E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 200kWe diesel, allocation heat	Energy		1.69E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 200kWe lean burn, allocation energy	Energy		8.93E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 200kWe lean burn, allocation exergy	Energy		1.81E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 200kWe lean burn, allocation heat	Energy		1.68E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 500kWe lean burn, allocation energy	Energy		9.22E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 500kWe lean burn, allocation exergy	Energy		1.72E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 500kWe lean burn, allocation heat	Energy		1.29E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 50kWe lean burn, allocation energy	Energy		9.10E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, at cogen 50kWe lean burn, allocation exergy	Energy		1.94E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 50kWe lean burn, allocation heat	Energy		2.38E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 6400kWth, wood, allocation energy	Energy		3.68E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 6400kWth, wood, allocation exergy	Energy		8.41E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 6400kWth, wood, allocation heat	Energy		5.45E-04	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 6400kWth, wood, emission control, allocation energy	Energy		1.07E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 6400kWth, wood, emission control, allocation exergy	Energy		2.62E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen 6400kWth, wood, emission control, allocation heat	Energy		5.71E-04	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen ORC 1400kWth, wood, allocation energy	Energy		5.55E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen ORC 1400kWth, wood, allocation exergy	Energy		1.63E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen ORC 1400kWth, wood, allocation heat	Energy		2.16E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen ORC 1400kWth, wood, emission control, allocation energy	Energy		1.37E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen ORC 1400kWth, wood, emission control, allocation exergy	Energy		5.04E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen ORC 1400kWth, wood, emission control, allocation heat	Energy		2.39E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen with biogas engine, agricultural covered, alloc. exergy	Energy		4.44E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen with biogas engine, agricultural, alloc. exergy	Energy		1.02E-01	MJ	2006	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen with biogas engine, allocation exergy	Energy		7.13E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, at cogen with ignition biogas engine, agric. covered, alloc. exergy	Energy		6.78E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen with ignition biogas engine, allocation exergy	Energy		1.16E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at cogen, biogas agricultural mix, allocation exergy	Energy		7.16E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at Mini CHP plant, allocation energy	Energy		8.29E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at Mini CHP plant, allocation exergy	Energy		2.15E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at Mini CHP plant, allocation heat	Energy		4.16E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at refinery, CH	Energy		1.45E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at refinery, Europe	Energy		1.40E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
electricity, at wind power plant 2MW, offshore	Energy		3.99E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Oceanic
electricity, at wind power plant 600kW	Energy		4.80E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at wind power plant 800kW, CH	Energy		4.48E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at wind power plant 800kW, Europe	Energy		3.13E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Europe
electricity, at wind power plant Grenchenberg 150kW	Energy		8.65E-03	MJ	1991	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at wind power plant Simplon 30kW	Energy		1.51E-02	MJ	1991	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at wind power plant, CH	Energy		4.83E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
electricity, at wind power plant, Europe	Energy		3.15E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Europe
electricity, bagasse, sugarcane, at fermentation plant	Energy		7.15E-03	MJ	2006	Ecoinvent data V2.2 (2010)	Brazil
electricity, bagasse, sugarcane, at sugar refinery	Energy		4.99E-03	MJ	2006	Ecoinvent data V2.2 (2010)	Brazil
electricity, bagasse, sweet sorghum, at distillery	Energy		2.00E-02	MJ	2006	Ecoinvent data V2.2 (2010)	China
electricity, biogas, allocation exergy, at micro gas turbine 100kWe	Energy		1.37E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, biogas, allocation exergy, at PEM fuel cell 2kWe, future	Energy		1.46E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, biogas, allocation exergy, at SOFC fuel cell 125kWe, future	Energy		1.01E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, biogas, allocation exergy, at SOFC-GT fuel cell 180kWe, future	Energy		8.62E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, biowaste, at waste incineration plant, allocation price	Energy		4.08E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, biowaste, at waste incineration plant, future, alloc. price	Energy		1.98E-02	MJ	2010-2020	2010-2021	2010-2022
electricity, certified eletricity	Energy		1.75E-03	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, consumer mix	Energy		3.20E-02	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, digester sludge, at incineration plant, future, alloc. price	Energy		5.19E-02	MJ	2010-2020	2010-2021	2010-2022
electricity, hard coal, at coal mine power plant	Energy		1.14E+00	MJ	2002	Ecoinvent data V2.2 (2010)	China
electricity, hard coal, at power plant, AT	Energy		2.73E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
electricity, hard coal, at power plant, BE	Energy		3.01E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Belgium
electricity, hard coal, at power plant, Central European Power Association	Energy		3.21E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Central European Power Association
electricity, hard coal, at power plant, CN	Energy		3.92E-01	MJ	2002	Ecoinvent data V2.2 (2010)	China
electricity, hard coal, at power plant, CZ	Energy		3.61E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, hard coal, at power plant, DE	Energy		3.04E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
electricity, hard coal, at power plant, Electric Reliability Council of Texas, US	Energy		3.46E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Electric Reliability Council of Texas, US
electricity, hard coal, at power plant, ES	Energy		3.06E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
electricity, hard coal, at power plant, Florida Reliability Coordinating Council, US	Energy		2.77E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Florida Reliability Coordinating Council, US
electricity, hard coal, at power plant, FR	Energy		2.98E-01	MJ	2000	Ecoinvent data V2.2 (2010)	France
electricity, hard coal, at power plant, HR	Energy		3.06E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Croatia
electricity, hard coal, at power plant, IT	Energy		2.86E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Italy
electricity, hard coal, at power plant, Midwest Reliability Organization, US	Energy		4.10E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Midwest Reliability Organization, US
electricity, hard coal, at power plant, NL	Energy		3.01E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, hard coal, at power plant, Nordic Countries Power Association	Energy		2.68E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
electricity, hard coal, at power plant, Northeast Power Coordinating Council, US	Energy		3.18E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Norwayrtheast Power Coordinating Council, US
electricity, hard coal, at power plant, PO	Energy		3.20E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Poland
electricity, hard coal, at power plant, PT	Energy		2.75E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Portugal
electricity, hard coal, at power plant, Reliability First Corporation, US	Energy		3.13E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Reliability First Corporation, US
electricity, hard coal, at power plant, SERC Reliability Corporation, US	Energy		3.22E-01	MJ	2004	Ecoinvent data V2.2 (2010)	SERC Reliability Corporation, US
electricity, hard coal, at power plant, SK	Energy		2.83E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Slovakia
electricity, hard coal, at power plant, Southwest Power Pool, US	Energy		3.94E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Southwest Power Pool, US
electricity, hard coal, at power plant, UCTE	Energy		3.00E-01	MJ	2000	Ecoinvent data V2.2 (2010)	UCTE
electricity, hard coal, at power plant, USA	Energy		3.31E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United States
electricity, hard coal, at power plant, Western Electricity Coordinating Council, US	Energy		3.45E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Western Electricity Coordinating Council, US
electricity, high voltage, aluminium industry, at grid	Energy		9.46E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Global
electricity, high voltage, at grid, AT	Energy		1.10E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Austria
electricity, high voltage, at grid, BA	Energy		1.88E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, high voltage, at grid, BE	Energy		9.31E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Belgium
electricity, high voltage, at grid, BG	Energy		1.68E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bulgaria
electricity, high voltage, at grid, BR	Energy		6.17E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Brazil

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, high voltage, at grid, CH	Energy		3.57E-02	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, high voltage, at grid, CN	Energy		3.23E-01	MJ	2005	Ecoinvent data V2.2 (2010)	China
electricity, high voltage, at grid, CZ	Energy		2.24E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, high voltage, at grid, DE	Energy		1.80E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Germany
electricity, high voltage, at grid, DK	Energy		1.58E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Denmark
electricity, high voltage, at grid, ES	Energy		1.41E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Spain
electricity, high voltage, at grid, FI	Energy		1.24E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Finland
electricity, high voltage, at grid, FR	Energy		2.56E-02	MJ	2004	Ecoinvent data V2.2 (2010)	France
electricity, high voltage, at grid, GB	Energy		1.65E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, high voltage, at grid, GR	Energy		2.74E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Greece
electricity, high voltage, at grid, HR	Energy		1.32E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Croatia
electricity, high voltage, at grid, HU	Energy		1.75E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Hungary
electricity, high voltage, at grid, IE	Energy		2.15E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Ireland
electricity, high voltage, at grid, IT	Energy		1.60E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Italy
electricity, high voltage, at grid, JP	Energy		1.50E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Japan
electricity, high voltage, at grid, LU	Energy		1.58E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, high voltage, at grid, MK	Energy		2.68E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Macedonia
electricity, high voltage, at grid, NL	Energy		1.88E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Netherlands
electricity, high voltage, at grid, NO	Energy		9.60E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Norway
electricity, high voltage, at grid, PO	Energy		3.10E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Poland
electricity, high voltage, at grid, PT	Energy		1.68E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Portugal
electricity, high voltage, at grid, RO	Energy		1.85E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Romania
electricity, high voltage, at grid, RS	Energy		2.47E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity, high voltage, at grid, SE	Energy		2.38E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Sweden
electricity, high voltage, at grid, SI	Energy		1.20E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovenia
electricity, high voltage, at grid, SK	Energy		1.28E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovakia
electricity, high voltage, at grid, USA	Energy		2.11E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United States
electricity, high voltage, certified electricity. at grid	Energy		2.32E-03	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, high voltage, consumer mix, at grid	Energy		3.29E-02	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, high voltage, production CENTREL, at grid	Energy		2.53E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Central European Power

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
							Association
electricity, high voltage, production NORDEL, at grid	Energy		4.66E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
electricity, high voltage, production UCTE, at grid	Energy		1.45E-01	MJ	2004	Ecoinvent data V2.2 (2010)	UCTE
electricity, high voltage, production, AT, at grid	Energy		8.76E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Austria
electricity, high voltage, production, BA, at grid	Energy		1.91E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, high voltage, production, BE, at grid	Energy		9.24E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Belgium
electricity, high voltage, production, BG, at grid	Energy		1.68E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bulgaria
electricity, high voltage, production, BR, at grid	Energy		6.36E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Brazil
electricity, high voltage, production, CH, at grid	Energy		6.09E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, high voltage, production, CZ, at grid	Energy		2.14E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, high voltage, production, DE, at grid	Energy		1.87E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Germany
electricity, high voltage, production, DK, at grid	Energy		1.76E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Denmark
electricity, high voltage, production, ES, at grid	Energy		1.44E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Spain
electricity, high voltage, production, Europe, at grid	Energy		1.37E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Europe
electricity, high voltage, production, FI, at grid	Energy		1.08E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Finland
electricity, high voltage, production, FR, at grid	Energy		2.50E-02	MJ	2004	Ecoinvent data V2.2 (2010)	France
electricity, high voltage, production, GR, at grid	Energy		2.82E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Greece
electricity, high voltage, production, HR, at grid	Energy		9.35E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Croatia
electricity, high voltage, production, HU, at grid	Energy		1.95E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Hungary
electricity, high voltage, production, IE, at grid	Energy		2.18E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Ireland
electricity, high voltage, production, IT, at grid	Energy		1.78E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Italy
electricity, high voltage, production, LU, at grid	Energy		1.48E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, high voltage, production, MK, at grid	Energy		2.71E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Macedonia
electricity, high voltage, production, NL, at grid	Energy		1.93E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Netherlands
electricity, high voltage, production, NO, at grid	Energy		3.08E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Norway
electricity, high voltage, production, PO, at grid	Energy		3.17E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Poland
electricity, high voltage, production, PT, at grid	Energy		1.72E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Portugal
electricity, high voltage, production, RO, at grid	Energy		1.84E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Romania

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, high voltage, production, RS, at grid	Energy		2.58E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity, high voltage, production, SE, at grid	Energy		1.13E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Sweden
electricity, high voltage, production, SI, at grid	Energy		1.38E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovenia
electricity, high voltage, production, SK, at grid	Energy		1.04E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovakia
electricity, high voltage, production, UK, at grid	Energy		1.68E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, high voltage, SBB, at grid	Energy		3.36E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, hydropower, at power plant, AT	Energy		1.18E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
electricity, hydropower, at power plant, BA	Energy		1.89E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, hydropower, at power plant, BE	Energy		1.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Belgium
electricity, hydropower, at power plant, CH	Energy		1.25E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, hydropower, at power plant, CZ	Energy		1.65E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, hydropower, at power plant, DE	Energy		1.43E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
electricity, hydropower, at power plant, DK	Energy		1.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Denmark
electricity, hydropower, at power plant, ES	Energy		1.87E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
electricity, hydropower, at power plant, FI	Energy		8.83E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Finland
electricity, hydropower, at power plant, FR	Energy		1.13E-03	MJ	2000	Ecoinvent data V2.2 (2010)	France
electricity, hydropower, at power plant, GB	Energy		1.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, hydropower, at power plant, GR	Energy		3.48E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Greece
electricity, hydropower, at power plant, HR	Energy		3.43E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Croatia
electricity, hydropower, at power plant, HU	Energy		1.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Hungary
electricity, hydropower, at power plant, IE	Energy		1.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Ireland
electricity, hydropower, at power plant, IT	Energy		1.40E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Italy
electricity, hydropower, at power plant, JP	Energy		1.29E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Japan
electricity, hydropower, at power plant, LU	Energy		1.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, hydropower, at power plant, MK	Energy		3.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Macedonia
electricity, hydropower, at power plant, NL	Energy		1.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands
electricity, hydropower, at power plant, NO	Energy		1.60E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Norway
electricity, hydropower, at power plant, PO	Energy		1.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Poland
electricity, hydropower, at power plant, PT	Energy		1.95E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Portugal
electricity, hydropower, at power plant, RS	Energy		1.45E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Serbia and Montenegro

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, hydropower, at power plant, SE	Energy		1.52E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Sweden
electricity, hydropower, at power plant, SI	Energy		1.04E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Slovenia
electricity, hydropower, at power plant, SK	Energy		1.65E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Slovakia
electricity, hydropower, at pumped storage power plant, AT	Energy		1.59E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Austria
electricity, hydropower, at pumped storage power plant, BA	Energy		2.72E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, hydropower, at pumped storage power plant, BE	Energy		1.36E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Belgium
electricity, hydropower, at pumped storage power plant, CH	Energy		5.25E-02	MJ	1970	Ecoinvent data V2.2 (2010)	Switzerland
electricity, hydropower, at pumped storage power plant, CZ	Energy		3.23E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Switzerland
electricity, hydropower, at pumped storage power plant, DE	Energy		2.61E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Germany
electricity, hydropower, at pumped storage power plant, DK	Energy		2.29E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Denmark
electricity, hydropower, at pumped storage power plant, ES	Energy		2.05E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Spain
electricity, hydropower, at pumped storage power plant, FI	Energy		1.80E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Finland
electricity, hydropower, at pumped storage power plant, FR	Energy		3.83E-02	MJ	1970	Ecoinvent data V2.2 (2010)	France
electricity, hydropower, at pumped storage power plant, GB	Energy		2.39E-01	MJ	1970	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, hydropower, at pumped storage power plant, GR	Energy		3.95E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Greece
electricity, hydropower, at pumped storage power plant, HR	Energy		1.92E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Croatia
electricity, hydropower, at pumped storage power plant, HU	Energy		2.54E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Hungary
electricity, hydropower, at pumped storage power plant, IE	Energy		3.11E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Ireland
electricity, hydropower, at pumped storage power plant, IT	Energy		2.30E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Italy

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, hydropower, at pumped storage power plant, JP	Energy		2.18E-01	MJ	2002	Ecoinvent data V2.2 (2010)	Japan
electricity, hydropower, at pumped storage power plant, LU	Energy		2.26E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, hydropower, at pumped storage power plant, MK	Energy		3.87E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Macedonia
electricity, hydropower, at pumped storage power plant, NL	Energy		2.72E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Netherlands
electricity, hydropower, at pumped storage power plant, NO	Energy		1.69E-02	MJ	1970	Ecoinvent data V2.2 (2010)	Norway
electricity, hydropower, at pumped storage power plant, PO	Energy		4.47E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Poland
electricity, hydropower, at pumped storage power plant, PT	Energy		2.43E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Portugal
electricity, hydropower, at pumped storage power plant, RS	Energy		3.56E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity, hydropower, at pumped storage power plant, SE	Energy		3.72E-02	MJ	1970	Ecoinvent data V2.2 (2010)	Sweden
electricity, hydropower, at pumped storage power plant, SI	Energy		1.75E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Slovenia
electricity, hydropower, at pumped storage power plant, SK	Energy		1.86E-01	MJ	1970	Ecoinvent data V2.2 (2010)	Slovakia
electricity, hydropower, at pumped storage power plant, USA	Energy		3.05E-01	MJ	1970	Ecoinvent data V2.2 (2010)	United States
electricity, hydropower, at reservoir power plant, alpine region	Energy		1.60E-03	MJ	1970	Ecoinvent data V2.2 (2010)	Europe
electricity, hydropower, at reservoir power plant, BR	Energy		4.41E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Brazil
electricity, hydropower, at reservoir power plant, CH	Energy		1.47E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, hydropower, at reservoir power plant, FI	Energy		1.14E-02	MJ	1970	Ecoinvent data V2.2 (2010)	Finland
electricity, hydropower, at reservoir power plant, non alpine regions	Energy		3.48E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, hydropower, at run-of-river power plant, CH	Energy		9.82E-04	MJ	1970	Ecoinvent data V2.2 (2010)	Switzerland
electricity, hydropower, at run-of-river power plant, Europe	Energy		1.04E-03	MJ	1970	Ecoinvent data V2.2 (2010)	Europe
electricity, industrial gas, at power plant, AT	Energy		2.46E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
electricity, industrial gas, at power plant, BE	Energy		4.84E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Belgium
electricity, industrial gas, at power plant, Central European Power Association	Energy		6.17E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Central European Power Association
electricity, industrial gas, at power plant, DE	Energy		4.19E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
electricity, industrial gas, at power plant, ES	Energy		3.97E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
electricity, industrial gas, at power plant, FR	Energy		5.64E-01	MJ	2000	Ecoinvent data V2.2 (2010)	France
electricity, industrial gas, at power plant, IT	Energy		5.62E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Italy
electricity, industrial gas, at power plant, NL	Energy		5.62E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands
electricity, industrial gas, at power plant, Nordic Countries Power Association	Energy		3.68E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
electricity, industrial gas, at power plant, UCTE	Energy		4.89E-01	MJ	2000	Ecoinvent data V2.2 (2010)	UCTE
electricity, lignite, at power plant, AT	Energy		2.94E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
electricity, lignite, at power plant, BA	Energy		3.63E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, lignite, at power plant, Central European Power Association	Energy		3.26E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Central European Power Association
electricity, lignite, at power plant, CZ	Energy		3.26E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, lignite, at power plant, DE	Energy		3.39E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
electricity, lignite, at power plant, ES	Energy		3.01E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
electricity, lignite, at power plant, FR	Energy		3.91E-01	MJ	2000	Ecoinvent data V2.2 (2010)	France
electricity, lignite, at power plant, GR	Energy		3.60E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Greece
electricity, lignite, at power plant, HU	Energy		3.89E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Hungary
electricity, lignite, at power plant, MK	Energy		3.48E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Macedonia
electricity, lignite, at power plant, PO	Energy		3.09E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Poland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, lignite, at power plant, RS	Energy		3.72E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity, lignite, at power plant, SI	Energy		3.31E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Slovenia
electricity, lignite, at power plant, SK	Energy		4.70E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Slovakia
electricity, lignite, at power plant, UCTE	Energy		3.42E-01	MJ	2000	Ecoinvent data V2.2 (2010)	UCTE
electricity, low voltage, at grid, AT	Energy		1.23E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Austria
electricity, low voltage, at grid, BA	Energy		2.60E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, low voltage, at grid, BE	Energy		1.02E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Belgium
electricity, low voltage, at grid, BG	Energy		2.19E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bulgaria
electricity, low voltage, at grid, BR	Energy		8.06E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Brazil
electricity, low voltage, at grid, CH	Energy		4.13E-02	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, low voltage, at grid, CN	Energy		4.17E-01	MJ	2005	Ecoinvent data V2.2 (2010)	China
electricity, low voltage, at grid, CZ	Energy		2.57E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, low voltage, at grid, DE	Energy		2.00E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Germany
electricity, low voltage, at grid, DK	Energy		1.73E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Denmark
electricity, low voltage, at grid, ES	Energy		1.65E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Spain
electricity, low voltage, at grid, FI	Energy		1.39E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Finland
electricity, low voltage, at grid, FR	Energy		2.99E-02	MJ	2004	Ecoinvent data V2.2 (2010)	France
electricity, low voltage, at grid, GB	Energy		1.90E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, low voltage, at grid, GR	Energy		3.18E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Greece
electricity, low voltage, at grid, HR	Energy		1.65E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Croatia
electricity, low voltage, at grid, HU	Energy		2.08E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Hungary
electricity, low voltage, at grid, IE	Energy		2.46E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Ireland
electricity, low voltage, at grid, IT	Energy		1.78E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Italy
electricity, low voltage, at grid, JP	Energy		1.64E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Japan
electricity, low voltage, at grid, LU	Energy		1.78E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, low voltage, at grid, MK	Energy		3.54E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Macedonia
electricity, low voltage, at grid, NL	Energy		2.02E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Netherlands
electricity, low voltage, at grid, NO	Energy		1.23E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Norway
electricity, low voltage, at grid, PO	Energy		3.31E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Poland
electricity, low voltage, at grid, PT	Energy		1.93E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Portugal
electricity, low voltage, at grid, RO	Energy		2.24E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Romania
electricity, low voltage, at grid, RS	Energy		3.19E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Serbia and

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
							Montenegro
electricity, low voltage, at grid, SE	Energy		2.83E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Sweden
electricity, low voltage, at grid, SI	Energy		1.35E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovenia
electricity, low voltage, at grid, SK	Energy		1.40E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovakia
electricity, low voltage, at grid, USA	Energy		2.33E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United States
electricity, low voltage, certified electricity, at grid	Energy		4.08E-03	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, low voltage, consumer mix, at grid	Energy		3.81E-02	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, low voltage, production CENTREL, at grid	Energy		2.96E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Central European Power Association
electricity, low voltage, production NORDEL, at grid	Energy		5.30E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
electricity, low voltage, production UCTE, at grid	Energy		1.65E-01	MJ	2004	Ecoinvent data V2.2 (2010)	UCTE
electricity, low voltage, production, AT, at grid	Energy		9.86E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Austria
electricity, low voltage, production, BA, at grid	Energy		2.64E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, low voltage, production, BE, at grid	Energy		1.01E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Belgium
electricity, low voltage, production, BG, at grid	Energy		2.19E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bulgaria
electricity, low voltage, production, BR, at grid	Energy		8.29E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Brazil
electricity, low voltage, production, CH, at grid	Energy		8.30E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, low voltage, production, CZ, at grid	Energy		2.45E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, low voltage, production, DE, at grid	Energy		2.07E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Germany
electricity, low voltage, production, DK, at grid	Energy		1.92E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Denmark
electricity, low voltage, production, ES, at grid	Energy		1.68E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Spain
electricity, low voltage, production, Europe, at grid	Energy		1.56E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Europe
electricity, low voltage, production, FI, at grid	Energy		1.21E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Finland
electricity, low voltage, production, FR, at grid	Energy		2.93E-02	MJ	2004	Ecoinvent data V2.2 (2010)	France
electricity, low voltage, production, GR, at grid	Energy		3.27E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Greece
electricity, low voltage, production, HR, at grid	Energy		1.17E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Croatia

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, low voltage, production, HU, at grid	Energy		2.31E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Hungary
electricity, low voltage, production, IE, at grid	Energy		2.49E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Ireland
electricity, low voltage, production, IT, at grid	Energy		1.99E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Italy
electricity, low voltage, production, LU, at grid	Energy		1.67E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, low voltage, production, MK, at grid	Energy		3.58E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Macedonia
electricity, low voltage, production, NL, at grid	Energy		2.06E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Netherlands
electricity, low voltage, production, NO, at grid	Energy		4.97E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Norway
electricity, low voltage, production, PO, at grid	Energy		3.79E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Poland
electricity, low voltage, production, PT, at grid	Energy		1.98E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Portugal
electricity, low voltage, production, RO, at grid	Energy		2.23E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Romania
electricity, low voltage, production, RS, at grid	Energy		3.33E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity, low voltage, production, SE, at grid	Energy		1.42E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Sweden
electricity, low voltage, production, SI, at grid	Energy		1.55E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovenia
electricity, low voltage, production, SK, at grid	Energy		1.14E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovakia
electricity, low voltage, production, UK, at grid	Energy		1.94E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, medium voltage, aluminium industry, at grid	Energy		9.67E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Global
electricity, medium voltage, at grid, AT	Energy		1.11E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Austria
electricity, medium voltage, at grid, BA	Energy		1.95E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, medium voltage, at grid, BE	Energy		9.44E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Belgium
electricity, medium voltage, at grid, BG	Energy		1.73E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bulgaria
electricity, medium voltage, at grid, BR	Energy		6.34E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Brazil
electricity, medium voltage, at grid, CH	Energy		3.64E-02	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, medium voltage, at grid, CN	Energy		3.27E-01	MJ	2005	Ecoinvent data V2.2 (2010)	China
electricity, medium voltage, at grid, CZ	Energy		2.27E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, medium voltage, at grid, DE	Energy		1.83E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Germany
electricity, medium voltage, at grid, DK	Energy		1.59E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Denmark
electricity, medium voltage, at grid, ES	Energy		1.44E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Spain
electricity, medium voltage, at grid, FI	Energy		1.25E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Finland
electricity, medium voltage, at grid, FR	Energy		2.63E-02	MJ	2004	Ecoinvent data V2.2 (2010)	France
electricity, medium voltage, at grid, GB	Energy		1.68E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United Kingdom

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, medium voltage, at grid, GR	Energy		2.79E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Greece
electricity, medium voltage, at grid, HR	Energy		1.35E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Croatia
electricity, medium voltage, at grid, HU	Energy		1.78E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Hungary
electricity, medium voltage, at grid, IE	Energy		2.19E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Ireland
electricity, medium voltage, at grid, IT	Energy		1.62E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Italy
electricity, medium voltage, at grid, JP	Energy		1.52E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Japan
electricity, medium voltage, at grid, LU	Energy		1.60E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, medium voltage, at grid, MK	Energy		2.77E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Macedonia
electricity, medium voltage, at grid, NL	Energy		1.90E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Netherlands
electricity, medium voltage, at grid, NO	Energy		1.01E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Norway
electricity, medium voltage, at grid, PO	Energy		3.12E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Poland
electricity, medium voltage, at grid, PT	Energy		1.71E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Portugal
electricity, medium voltage, at grid, RO	Energy		1.89E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Romania
electricity, medium voltage, at grid, RS	Energy		2.53E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity, medium voltage, at grid, SE	Energy		2.44E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Sweden
electricity, medium voltage, at grid, SI	Energy		1.22E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovenia
electricity, medium voltage, at grid, SK	Energy		1.29E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovakia
electricity, medium voltage, at grid, USA	Energy		2.14E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United States
electricity, medium voltage, certified electricity, at grid	Energy		2.74E-03	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, medium voltage, consumer mix, at grid	Energy		3.36E-02	MJ	2007	Ecoinvent data V2.2 (2010)	Switzerland
electricity, medium voltage, production CENTREL, at grid	Energy		2.57E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Central European Power Association
electricity, medium voltage, production NORDEL, at grid	Energy		4.74E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
electricity, medium voltage, production UCTE, at grid	Energy		1.48E-01	MJ	2004	Ecoinvent data V2.2 (2010)	UCTE
electricity, medium voltage, production, AT, at grid	Energy		8.90E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Austria

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, medium voltage, production, BA, at grid	Energy		1.98E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, medium voltage, production, BE, at grid	Energy		9.37E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Belgium
electricity, medium voltage, production, BG, at grid	Energy		1.72E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bulgaria
electricity, medium voltage, production, BR, at grid	Energy		6.53E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Brazil
electricity, medium voltage, production, CH, at grid	Energy		6.56E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, medium voltage, production, CZ, at grid	Energy		2.17E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, medium voltage, production, DE, at grid	Energy		1.89E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Germany
electricity, medium voltage, production, DK, at grid	Energy		1.78E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Denmark
electricity, medium voltage, production, ES, at grid	Energy		1.46E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Spain
electricity, medium voltage, production, Europe, at grid	Energy		1.40E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Europe
electricity, medium voltage, production, FI, at grid	Energy		1.09E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Finland
electricity, medium voltage, production, FR, at grid	Energy		2.57E-02	MJ	2004	Ecoinvent data V2.2 (2010)	France
electricity, medium voltage, production, GR, at grid	Energy		2.86E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Greece
electricity, medium voltage, production, HR, at grid	Energy		9.60E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Croatia
electricity, medium voltage, production, HU, at grid	Energy		1.98E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Hungary
electricity, medium voltage, production, IE, at grid	Energy		2.22E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Ireland
electricity, medium voltage, production, IT, at grid	Energy		1.81E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Italy

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, medium voltage, production, LU, at grid	Energy		1.50E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, medium voltage, production, MK, at grid	Energy		2.80E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Macedonia
electricity, medium voltage, production, NL, at grid	Energy		1.94E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Netherlands
electricity, medium voltage, production, NO, at grid	Energy		3.52E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Norway
electricity, medium voltage, production, PO, at grid	Energy		3.23E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Poland
electricity, medium voltage, production, PT, at grid	Energy		1.75E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Portugal
electricity, medium voltage, production, RO, at grid	Energy		1.88E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Romania
electricity, medium voltage, production, RS, at grid	Energy		2.64E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity, medium voltage, production, SE, at grid	Energy		1.18E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Sweden
electricity, medium voltage, production, SI, at grid	Energy		1.40E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovenia
electricity, medium voltage, production, SK, at grid	Energy		1.05E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovakia
electricity, medium voltage, production, UK, at grid	Energy		1.72E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, natural gas, allocation exergy, at micro gas turbine 100kWe	Energy		1.96E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, natural gas, allocation exergy, at PEM fuel cell 2kWe, future	Energy		2.00E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, natural gas, allocation exergy, at SOFC fuel cell 125kWe, future	Energy		1.39E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, natural gas, allocation exergy, at SOFC-GT fuel cell 180kWe, future	Energy		1.18E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, natural gas, at combined cycle plant, best technology	Energy		1.18E-01	MJ	2002	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, natural gas, at power plant, Alaska Systems Coordinating Council, US	Energy		2.27E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Alaska Systems Coordinating Council, US
electricity, natural gas, at power plant, AT	Energy		2.24E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
electricity, natural gas, at power plant, BE	Energy		1.46E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Belgium
electricity, natural gas, at power plant, Central European Power Association	Energy		2.54E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Central European Power Association
electricity, natural gas, at power plant, DE	Energy		1.56E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
electricity, natural gas, at power plant, Electric Reliability Council of Texas, US	Energy		1.85E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Electric Reliability Council of Texas, US
electricity, natural gas, at power plant, ES	Energy		1.43E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
electricity, natural gas, at power plant, Florida Reliability Coordinating Council, US	Energy		2.59E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Florida Reliability Coordinating Council, US
electricity, natural gas, at power plant, FR	Energy		1.35E-01	MJ	2000	Ecoinvent data V2.2 (2010)	France
electricity, natural gas, at power plant, GB	Energy		1.34E-01	MJ	2000	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, natural gas, at power plant, IT	Energy		1.83E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Italy
electricity, natural gas, at power plant, JP	Energy		1.92E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Japan
electricity, natural gas, at power plant, LU	Energy		2.77E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, natural gas, at power plant, Midwest Reliability Organization, US	Energy		2.30E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Midwest Reliability Organization, US
electricity, natural gas, at power plant, NL	Energy		1.63E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands
electricity, natural gas, at power plant, Nordic Countries Power Association	Energy		1.66E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, natural gas, at power plant, Northeast Power Coordinating Council, US	Energy			1.90E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Norwayrtheast Power Coordinating Council, US
electricity, natural gas, at power plant, Reliability First Corporation, US	Energy			1.97E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Reliability First Corporation, US
electricity, natural gas, at power plant, SERC Reliability Corporation, US	Energy			1.85E-01	MJ	2004	Ecoinvent data V2.2 (2010)	SERC Reliability Corporation, US
electricity, natural gas, at power plant, Southwest Power Pool, US	Energy			1.83E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Southwest Power Pool, US
electricity, natural gas, at power plant, UCTE	Energy			1.79E-01	MJ	2000	Ecoinvent data V2.2 (2010)	UCTE
electricity, natural gas, at power plant, USA	Energy			1.90E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United States
electricity, natural gas, at power plant, Western Electricity Coordinating Council, US	Energy			1.88E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Western Electricity Coordinating Council, US
electricity, natural gas, at turbine, 10MW	Energy			2.03E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Global
electricity, nuclear, at power plant boiling water reactor, CH	Energy			2.94E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
electricity, nuclear, at power plant boiling water reactor, DE	Energy			2.88E-03	MJ	1999	Ecoinvent data V2.2 (2010)	Germany
electricity, nuclear, at power plant boiling water reactor, UCTE	Energy			2.10E-03	MJ	1999	Ecoinvent data V2.2 (2010)	UCTE
electricity, nuclear, at power plant boiling water reactor, USA	Energy			3.35E-03	MJ	2006	Ecoinvent data V2.2 (2010)	United States
electricity, nuclear, at power plant pressure water reactor, CH	Energy			1.47E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
electricity, nuclear, at power plant pressure water reactor, CN	Energy			3.04E-03	MJ	2003	Ecoinvent data V2.2 (2010)	China
electricity, nuclear, at power plant pressure water reactor, DE	Energy			2.65E-03	MJ	1999	Ecoinvent data V2.2 (2010)	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, nuclear, at power plant pressure water reactor, FR	Energy		1.69E-03	MJ	1999	Ecoinvent data V2.2 (2010)	France
electricity, nuclear, at power plant pressure water reactor, UCTE	Energy		2.18E-03	MJ	1999	Ecoinvent data V2.2 (2010)	UCTE
electricity, nuclear, at power plant pressure water reactor, USA	Energy		3.67E-03	MJ	2006	Ecoinvent data V2.2 (2010)	United States
electricity, nuclear, at power plant, CH	Energy		2.14E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
electricity, nuclear, at power plant, DE	Energy		2.72E-03	MJ	1999	Ecoinvent data V2.2 (2010)	Germany
electricity, nuclear, at power plant, UCTE	Energy		2.17E-03	MJ	1999	Ecoinvent data V2.2 (2010)	UCTE
electricity, nuclear, at power plant, USA	Energy		3.56E-03	MJ	2006	Ecoinvent data V2.2 (2010)	United States
electricity, nuclear, at pressure water reactor, centrifugal enrichment	Energy		1.48E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
electricity, oil, at power plant, AT	Energy		2.28E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
electricity, oil, at power plant, BE	Energy		2.56E-01	MJ	1995	Ecoinvent data V2.2 (2010)	Belgium
electricity, oil, at power plant, CZ	Energy		3.35E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
electricity, oil, at power plant, DE	Energy		3.14E-01	MJ	1996	Ecoinvent data V2.2 (2010)	Germany
electricity, oil, at power plant, DK	Energy		2.28E-01	MJ	1996	Ecoinvent data V2.2 (2010)	Denmark
electricity, oil, at power plant, ES	Energy		2.70E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
electricity, oil, at power plant, FI	Energy		1.45E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Finland
electricity, oil, at power plant, FR	Energy		2.10E-01	MJ	1996	Ecoinvent data V2.2 (2010)	France
electricity, oil, at power plant, GB	Energy		3.20E-01	MJ	2000	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, oil, at power plant, GR	Energy		2.46E-01	MJ	1985	Ecoinvent data V2.2 (2010)	Greece
electricity, oil, at power plant, HR	Energy		2.68E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Croatia
electricity, oil, at power plant, HU	Energy		2.40E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Hungary
electricity, oil, at power plant, IE	Energy		2.40E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Ireland
electricity, oil, at power plant, IT	Energy		2.45E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Italy
electricity, oil, at power plant, NL	Energy		1.98E-01	MJ	1993	Ecoinvent data V2.2 (2010)	Netherlands
electricity, oil, at power plant, PT	Energy		2.53E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Portugal
electricity, oil, at power plant, RS	Energy		2.72E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity, oil, at power plant, SE	Energy		1.68E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Sweden
electricity, oil, at power plant, SI	Energy		2.28E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Slovenia
electricity, oil, at power plant, SK	Energy		2.56E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Slovakia
electricity, oil, at power plant, UCTE	Energy		2.46E-01	MJ	2000	Ecoinvent data V2.2 (2010)	UCTE

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, peat, at power plant		Energy		3.09E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
electricity, pellets, allocation exergy, at stirling cogen unit 3kWe, future		Energy		4.32E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, production mix CENTREL		Energy		2.49E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Central European Power Association
electricity, production mix NORDEL		Energy		4.56E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
electricity, production mix photovoltaic, at plant, AT		Energy		2.15E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Austria
electricity, production mix photovoltaic, at plant, AU		Energy		1.53E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Australia
electricity, production mix photovoltaic, at plant, BE		Energy		2.46E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Belgium
electricity, production mix photovoltaic, at plant, CA		Energy		1.78E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Canada
electricity, production mix photovoltaic, at plant, CH		Energy		2.08E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, production mix photovoltaic, at plant, CZ		Energy		2.38E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Switzerland
electricity, production mix photovoltaic, at plant, DE		Energy		2.39E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Germany
electricity, production mix photovoltaic, at plant, DK		Energy		2.26E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Denmark
electricity, production mix photovoltaic, at plant, ES		Energy		1.41E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Spain
electricity, production mix photovoltaic, at plant, FI		Energy		2.33E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Finland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, production mix photovoltaic, at plant, FR	Energy		1.99E-02	MJ	2006	Ecoinvent data V2.2 (2010)	France
electricity, production mix photovoltaic, at plant, GB	Energy		2.46E-02	MJ	2006	Ecoinvent data V2.2 (2010)	United Kingdom
electricity, production mix photovoltaic, at plant, GR	Energy		1.55E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Greece
electricity, production mix photovoltaic, at plant, HU	Energy		1.97E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Hungary
electricity, production mix photovoltaic, at plant, IE	Energy		2.37E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Ireland
electricity, production mix photovoltaic, at plant, IT	Energy		1.89E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Italy
electricity, production mix photovoltaic, at plant, JP	Energy		2.04E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Japan
electricity, production mix photovoltaic, at plant, KR	Energy		1.94E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Republic of Korea
electricity, production mix photovoltaic, at plant, LU	Energy		2.25E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, production mix photovoltaic, at plant, NL	Energy		2.18E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Netherlands
electricity, production mix photovoltaic, at plant, NO	Energy		2.19E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Norway
electricity, production mix photovoltaic, at plant, NZ	Energy		1.66E-02	MJ	2006	Ecoinvent data V2.2 (2010)	New Zealand
electricity, production mix photovoltaic, at plant, PT	Energy		1.42E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Portugal
electricity, production mix photovoltaic, at plant, SE	Energy		2.23E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Sweden
electricity, production mix photovoltaic, at plant, TR	Energy		1.41E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Turkey
electricity, production mix photovoltaic, at plant, USA	Energy		1.31E-02	MJ	2006	Ecoinvent data V2.2 (2010)	United States
electricity, production mix UCTE	Energy		1.43E-01	MJ	2004	Ecoinvent data V2.2 (2010)	UCTE
electricity, production mix US	Energy		2.10E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United States
electricity, production mix, AT	Energy		8.62E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Austria

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, production mix, BA		Energy	1.86E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
electricity, production mix, BE		Energy	9.11E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Belgium
electricity, production mix, BG		Energy	1.64E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Bulgaria
electricity, production mix, BR		Energy	6.20E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Brazil
electricity, production mix, CH		Energy	5.49E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, production mix, CN		Energy	3.19E-01	MJ	2004	Ecoinvent data V2.2 (2010)	China
electricity, production mix, CZ		Energy	2.11E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
electricity, production mix, DE		Energy	1.84E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Germany
electricity, production mix, DK		Energy	1.74E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Denmark
electricity, production mix, ES		Energy	1.41E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Spain
electricity, production mix, Europe		Energy	1.35E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Europe
electricity, production mix, FI		Energy	1.07E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Finland
electricity, production mix, FR		Energy	2.43E-02	MJ	2004	Ecoinvent data V2.2 (2010)	France
electricity, production mix, GR		Energy	2.78E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Greece
electricity, production mix, HR		Energy	9.16E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Croatia
electricity, production mix, HU		Energy	1.92E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Hungary
electricity, production mix, IE		Energy	2.16E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Ireland
electricity, production mix, IT		Energy	1.76E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Italy
electricity, production mix, JP		Energy	1.48E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Japan
electricity, production mix, LU		Energy	1.46E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Luxembourg
electricity, production mix, MK		Energy	2.66E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Macedonia
electricity, production mix, NL		Energy	1.91E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Netherlands
electricity, production mix, NO		Energy	2.51E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Norway
electricity, production mix, PO		Energy	3.13E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Poland
electricity, production mix, PT		Energy	1.70E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Portugal
electricity, production mix, RO		Energy	1.81E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Romania
electricity, production mix, RS		Energy	2.53E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
electricity, production mix, SE		Energy	1.06E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Sweden
electricity, production mix, SI		Energy	1.36E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovenia
electricity, production mix, SK		Energy	1.03E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Slovakia
electricity, production mix, UK		Energy	1.66E-01	MJ	2004	Ecoinvent data V2.2 (2010)	United Kingdom

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electricity, PV, at 3kWp facade installation, multi-Si, panel, mounted	Energy		2.59E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp facade installation, single-Si, panel, mounted	Energy		2.88E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp facade, multi-Si, laminated, integrated	Energy		2.44E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp facade, single-Si, laminated, integrated	Energy		2.75E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp flat roof installation, multi-Si	Energy		1.79E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp flat roof installation, single-Si	Energy		1.99E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, a-Si, lam., integrated	Energy		1.55E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, a-Si, panel, mounted	Energy		2.00E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, CdTe, laminated, integrated	Energy		1.54E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, CIS, panel, mounted	Energy		1.78E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, multi-Si, laminated, integrated	Energy		1.61E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, multi-Si, panel, mounted	Energy		1.76E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, ribbon-Si, lam., integrated	Energy		1.49E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, ribbon-Si, panel, mounted	Energy		1.65E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, single-Si, laminated, integrated	Energy		1.82E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, PV, at 3kWp slanted-roof, single-Si, panel, mounted	Energy		1.96E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
electricity, wood, at distillery	Energy		1.06E-02	MJ	2006	Ecoinvent data V2.2 (2010)	Switzerland
energy reduction, ventilation system, 1 x 720 m3/h, PE ducts, with GHE	Energy		2.23E-02	MJ	2003	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
energy reduction, ventilation system, 1 x 720 m3/h, steel ducts, with GHE	Energy		2.52E-02	MJ	2003	Ecoinvent data V2.2 (2010)	Switzerland
energy reduction, ventilation system, 6 x 120 m3/h, PE ducts, with GHE	Energy		2.58E-02	MJ	2003	Ecoinvent data V2.2 (2010)	Switzerland
energy reduction, ventilation system, 6 x 120 m3/h, PE ducts, without GHE	Energy		2.63E-02	MJ	2003	Ecoinvent data V2.2 (2010)	Switzerland
energy reduction, ventilation system, 6 x 120 m3/h, steel ducts, with GHE	Energy		2.87E-02	MJ	2003	Ecoinvent data V2.2 (2010)	Switzerland
energy reduction, ventilation system, 6 x 120 m3/h, steel ducts, without GHE	Energy		2.94E-02	MJ	2003	Ecoinvent data V2.2 (2010)	Switzerland
hard coal briquette, burned in stove 5-15kW	Energy		1.12E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
hard coal briquettes, at plant	Energy		1.18E-02	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
hard coal coke, at plant, Europe	Energy		1.89E-02	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
hard coal coke, at plant, Global	Energy		2.48E-02	MJ	1998	Ecoinvent data V2.2 (2010)	Global
hard coal coke, burned in stove 5-15kW	Energy		1.24E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
hard coal, burned in coal mine power plant	Energy		1.46E-01	MJ	2002	Ecoinvent data V2.2 (2010)	China
hard coal, burned in industrial furnace 1-10MW	Energy		1.05E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
hard coal, burned in power plant, AT	Energy		1.10E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
hard coal, burned in power plant, BE	Energy		1.08E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Belgium
hard coal, burned in power plant, CN	Energy		1.40E-01	MJ	2002	Ecoinvent data V2.2 (2010)	China
hard coal, burned in power plant, CZ	Energy		1.06E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
hard coal, burned in power plant, DE	Energy		1.09E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
hard coal, burned in power plant, Electric Reliability Council of Texas, US	Energy		1.07E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Electric Reliability Council of Texas, US
hard coal, burned in power plant, ES	Energy		1.10E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
hard coal, burned in power plant, Florida Reliability Coordinating Council, US	Energy		1.04E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Florida Reliability Coordinating Council, US
hard coal, burned in power plant, FR	Energy		1.05E-01	MJ	2000	Ecoinvent data V2.2 (2010)	France
hard coal, burned in power plant, HR	Energy		1.08E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Croatia
hard coal, burned in power plant, IT	Energy		1.07E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Italy

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
hard coal, burned in power plant, Midwest Reliability Organization, US	Energy		1.07E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Midwest Reliability Organization, US
hard coal, burned in power plant, NL	Energy		1.06E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands
hard coal, burned in power plant, Nordic Countries Power Association	Energy		1.11E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
hard coal, burned in power plant, Northeast Power Coordinating Council, US	Energy		1.03E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Norwayrtheast Power Coordinating Council, US
hard coal, burned in power plant, Poland	Energy		1.07E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Poland
hard coal, burned in power plant, PT	Energy		1.03E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Portugal
hard coal, burned in power plant, Reliability First Corporation, US	Energy		1.04E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Reliability First Corporation, US
hard coal, burned in power plant, SERC Reliability Corporation, US	Energy		1.05E-01	MJ	2004	Ecoinvent data V2.2 (2010)	SERC Reliability Corporation, US
hard coal, burned in power plant, SK	Energy		1.09E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Slovakia
hard coal, burned in power plant, Southwest Power Pool, US	Energy		1.05E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Southwest Power Pool, US
hard coal, burned in power plant, Western Electricity Coordinating Council, US	Energy		1.07E-01	MJ	2004	Ecoinvent data V2.2 (2010)	Western Electricity Coordinating Council, US
heat, air-water heat pump 10kW, at heat radiator, CH	Energy		2.58E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, air-water heat pump 10kW, at heat radiator, Europe	Energy		7.23E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, anthracite, at stove 5-15kW	Energy		1.53E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
heat, at air-water heat pump 10kW, CH	Energy		2.27E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at air-water heat pump 10kW, Europe	Energy		6.70E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, at cogen 160kWe Jakobsberg, allocation electricity	Energy		1.69E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 160kWe Jakobsberg, allocation energy	Energy		9.57E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 160kWe Jakobsberg, allocation exergy	Energy		3.60E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 160kWe Jakobsberg, allocation heat	Energy		1.49E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 160kWe Jakobsberg, allocation price	Energy		5.24E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 160kWe lambda=1, allocation electricity	Energy		1.50E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 160kWe lambda=1, allocation energy	Energy		8.39E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 160kWe lambda=1, allocation exergy	Energy		3.07E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 160kWe lambda=1, allocation heat	Energy		1.33E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 160kWe lambda=1, allocation price	Energy		4.54E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 1MWe lean burn, allocation energy, CH	Energy		9.25E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 1MWe lean burn, allocation energy, Europe	Energy		9.19E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, at cogen 1MWe lean burn, allocation exergy, CH	Energy		2.75E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 1MWe lean burn, allocation exergy, Europe	Energy		2.73E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, at cogen 1MWe lean burn, allocation heat, CH	Energy		1.71E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 1MWe lean burn, allocation heat, Europe	Energy		1.70E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
heat, at cogen 200kWe diesel SCR, allocation energy	Energy		1.13E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 200kWe diesel SCR, allocation exergy	Energy		3.27E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 200kWe diesel, allocation heat	Energy		2.17E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 200kWe lean burn, allocation energy	Energy		8.86E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 200kWe lean burn, allocation exergy	Energy		3.06E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 200kWe lean burn, allocation heat	Energy		1.45E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 500kWe lean burn, allocation energy	Energy		9.18E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 500kWe lean burn, allocation exergy	Energy		2.96E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 500kWe lean burn, allocation heat	Energy		1.64E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 50kWe lean burn, allocation energy	Energy		8.98E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 50kWe lean burn, allocation exergy	Energy		3.24E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 50kWe lean burn, allocation heat	Energy		1.40E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 6400kWth, wood, allocation energy	Energy		3.15E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 6400kWth, wood, allocation exergy	Energy		2.64E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 6400kWth, wood, allocation heat	Energy		3.49E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 6400kWth, wood, emission control, allocation energy	Energy		1.02E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 6400kWth, wood, emission control, allocation exergy	Energy		8.62E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen 6400kWth, wood, emission control, allocation heat	Energy		1.13E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
heat, at cogen ORC 1400kWth, wood, allocation energy	Energy		3.40E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen ORC 1400kWth, wood, allocation exergy	Energy		2.95E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen ORC 1400kWth, wood, allocation heat	Energy		3.54E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen ORC 1400kWth, wood, emission control, allocation energy	Energy		1.09E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen ORC 1400kWth, wood, emission control, allocation exergy	Energy		9.51E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen ORC 1400kWth, wood, emission control, allocation heat	Energy		1.13E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen with biogas engine, agricultural covered, allocation exergy	Energy		4.29E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen with biogas engine, agricultural, allocation exergy	Energy		9.70E-03	MJ	2006	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen with biogas engine, allocation exergy	Energy		1.22E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen with ignition biogas engine, agricultural covered, alloc. exergy	Energy		6.84E-03	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen with ignition biogas engine, allocation exergy	Energy		2.00E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Switzerland
heat, at cogen, biogas agricultural mix, allocation exergy	Energy		9.39E-03	MJ	2006	Ecoinvent data V2.2 (2010)	Switzerland
heat, at flat plate collector, multiple dwelling, for hot water	Energy		2.91E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
heat, at flat plate collector, one-family house, for combined system	Energy		7.76E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
heat, at flat plate collector, one-family house, for hot water	Energy		1.02E-02	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
heat, at hard coal industrial furnace 1-10MW	Energy		1.31E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
heat, at heat pump 30kW, allocation electricity	Energy		6.10E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at heat pump 30kW, allocation energy	Energy		2.25E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at heat pump 30kW, allocation exergy	Energy		4.65E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at heat pump 30kW, allocation heat	Energy		7.87E-04	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland

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heat, at heat pump 30kW, allocation price	Energy		3.99E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at hot water tank, solar+electric, flat plate, multiple dwelling	Energy		3.55E-02	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
heat, at hot water tank, solar+gas, flat plate, multiple dwelling	Energy		6.13E-02	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
heat, at hot water tank, solar+gas, flat plate, one-family house	Energy		3.92E-02	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
heat, at local distribution cogen 160kWe Jakobsberg, allocation electricity	Energy		4.89E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at local distribution cogen 160kWe Jakobsberg, allocation energy	Energy		9.10E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at local distribution cogen 160kWe Jakobsberg, allocation exergy	Energy		6.47E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at local distribution cogen 160kWe Jakobsberg, allocation heat	Energy		1.15E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at local distribution cogen 160kWe Jakobsberg, allocation price	Energy		7.19E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at Mini CHP plant, allocation energy	Energy		8.28E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at Mini CHP plant, allocation exergy	Energy		3.19E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at Mini CHP plant, allocation heat	Energy		1.15E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at module cogen 160kWe Jakobsberg, allocation electricity	Energy		1.34E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at module cogen 160kWe Jakobsberg, allocation energy	Energy		7.97E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at module cogen 160kWe Jakobsberg, allocation exergy	Energy		3.83E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at module cogen 160kWe Jakobsberg, allocation heat	Energy		1.17E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at module cogen 160kWe Jakobsberg, allocation price	Energy		4.97E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at solar+gas heating, flat plate, one-family house, combined system	Energy		5.74E-02	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
heat, at solar+gas heating, tube collector, one-family house, combined system	Energy		5.68E-02	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
heat, at solar+wood heating, flat plate, one-family house, combined system	Energy		7.61E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
heat, at system cogen 160kWe Jakobsberg, allocation electricity	Energy		4.56E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at system cogen 160kWe Jakobsberg, allocation energy	Energy		8.54E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at system cogen 160kWe Jakobsberg, allocation exergy	Energy		6.05E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at system cogen 160kWe Jakobsberg, allocation heat	Energy		1.08E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at system cogen 160kWe Jakobsberg, allocation price	Energy		6.74E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, at tube collector, one-family house, for combined system	Energy		6.83E-03	MJ	2002	Ecoinvent data V2.2 (2010)	Switzerland
heat, biogas, allocation exergy, at micro gas turbine 100kWe	Energy		2.46E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, biogas, allocation exergy, at PEM fuel cell 2kWe, future	Energy		1.55E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, biogas, allocation exergy, at SOFC fuel cell 125kWe, future	Energy		1.73E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, biogas, allocation exergy, at SOFC-GT fuel cell 180kWe, future	Energy		1.47E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, biogas, at diffusion absorption heat pump 4kW, future	Energy		4.08E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, biowaste, at waste incineration plant, allocation price	Energy		1.40E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, biowaste, at waste incineration plant, future, allocation price	Energy		6.77E-03	MJ	2010-2020	Ecoinvent data V2.2 (2010)	Switzerland
heat, borehole heat exchanger, at brine-water heat pump 10kW, CH	Energy		4.81E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, borehole heat exchanger, at brine-water heat pump 10kW, Europe	Energy		1.64E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, borehole heat exchanger, brine-water heat pump 10kW, at heat radiator, CH	Energy		1.91E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
heat, borehole heat exchanger, brine-water heat pump 10kW, at heat radiator, Europe	Energy		5.25E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, digester sludge, at incineration plant, future, allocation price	Energy		1.78E-02	MJ	2010-2020	Ecoinvent data V2.2 (2010)	Switzerland
heat, hard coal briquette, at stove 5-15kW	Energy		1.60E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
heat, hard coal coke, at stove 5-15kW	Energy		1.78E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
heat, hardwood chips from forest, at furnace 1000kW	Energy		4.11E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, hardwood chips from forest, at furnace 300kW	Energy		4.33E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, hardwood chips from forest, at furnace 50kW	Energy		5.65E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, hardwood chips from industry, at furnace 1000kW	Energy		3.25E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, hardwood chips from industry, at furnace 300kW	Energy		3.50E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, hardwood chips from industry, at furnace 50kW	Energy		4.80E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, hardwood logs, at furnace 100kW	Energy		4.68E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, hardwood logs, at furnace 30kW	Energy		5.49E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, hardwood logs, at wood heater 6kW	Energy		5.91E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, heavy fuel oil, at industrial furnace 1MW, CH	Energy		9.97E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, heavy fuel oil, at industrial furnace 1MW, Europe	Energy		9.49E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, light fuel oil, at boiler 100kW condensing, non-modulating	Energy		8.86E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, light fuel oil, at boiler 100kW, non-modulating	Energy		9.39E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, light fuel oil, at boiler 10kW condensing, non-modulating	Energy		8.93E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, light fuel oil, at boiler 10kW, non-modulating	Energy		9.47E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heat, light fuel oil, at industrial furnace 1MW, CH	Energy		9.27E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
heat, light fuel oil, at industrial furnace 1MW, Europe	Energy		9.10E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, lignite briquette, at stove 5-15kW	Energy		2.01E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
heat, mixed chips from forest, at furnace 1000kW	Energy		4.60E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, mixed chips from forest, at furnace 300kW	Energy		4.83E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, mixed chips from forest, at furnace 50kW	Energy		6.36E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, mixed chips from industry, at furnace 1000kW	Energy		3.37E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, mixed chips from industry, at furnace 300kW	Energy		3.68E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, mixed chips from industry, at furnace 50kW	Energy		5.17E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, mixed logs, at furnace 100kW	Energy		5.39E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, mixed logs, at furnace 30kW	Energy		6.23E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, mixed logs, at wood heater 6kW	Energy		6.58E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, natural gas, allocation exergy, at micro gas turbine 100kWe	Energy		3.33E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, natural gas, allocation exergy, at PEM fuel cell 2kWe, future	Energy		2.05E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, natural gas, allocation exergy, at SOFC fuel cell 125kWe, future	Energy		2.36E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, natural gas, allocation exergy, at SOFC-GT fuel cell 180kWe, future	Energy		2.01E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, natural gas, at boiler atm. low-NOx condensing non-modulating <100kW	Energy		7.50E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, natural gas, at boiler atmospheric low-NOx non-modulating <100kW	Energy		8.18E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, natural gas, at boiler atmospheric non-modulating <100kW	Energy		7.72E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, natural gas, at boiler condensing modulating <100kW	Energy		7.19E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, natural gas, at boiler condensing modulating >100kW	Energy		6.70E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
heat, natural gas, at boiler fan burner low-NOx non-modulating <100kW	Energy		8.51E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, natural gas, at boiler fan burner non-modulating <100kW	Energy		7.77E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, natural gas, at boiler modulating <100kW	Energy		7.63E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, natural gas, at boiler modulating >100kW	Energy		7.10E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, natural gas, at diffusion absorption heat pump 4kW, future	Energy		5.58E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, natural gas, at industrial furnace >100kW	Energy		7.16E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, natural gas, at industrial furnace low-NOx >100kW	Energy		7.77E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heat, pellets, allocation exergy, at stirling cogen unit 3kWe, future	Energy		5.10E-03	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
heat, softwood chips from forest, at furnace 1000kW	Energy		4.85E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, softwood chips from forest, at furnace 300kW	Energy		5.09E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, softwood chips from forest, at furnace 50kW	Energy		6.69E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, softwood chips from industry, at furnace 1000kW	Energy		3.44E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, softwood chips from industry, at furnace 300kW	Energy		3.77E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, softwood chips from industry, at furnace 50kW	Energy		5.34E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, softwood logs, at furnace 100kW	Energy		5.80E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, softwood logs, at furnace 30kW	Energy		6.65E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, softwood logs, at wood heater 6kW	Energy		6.96E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, unspecific, in chemical plant	Energy		9.96E-02	MJ	1997	Ecoinvent data V2.2 (2010)	Europe
heat, wood pellets, at furnace 15kW	Energy		1.54E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heat, wood pellets, at furnace 50kW	Energy		1.40E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
heavy fuel oil, burned in industrial furnace 1MW, non-modulating, CH	Energy		9.49E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heavy fuel oil, burned in industrial furnace 1MW, non-modulating, Europe	Energy		9.03E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe

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heavy fuel oil, burned in power plant, AT	Energy		8.98E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
heavy fuel oil, burned in power plant, BE	Energy		9.02E-02	MJ	1995	Ecoinvent data V2.2 (2010)	Belgium
heavy fuel oil, burned in power plant, CZ	Energy		9.13E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heavy fuel oil, burned in power plant, DE	Energy		9.03E-02	MJ	1996	Ecoinvent data V2.2 (2010)	Germany
heavy fuel oil, burned in power plant, DK	Energy		9.23E-02	MJ	1996	Ecoinvent data V2.2 (2010)	Denmark
heavy fuel oil, burned in power plant, ES	Energy		9.16E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
heavy fuel oil, burned in power plant, Europe	Energy		9.13E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
heavy fuel oil, burned in power plant, FI	Energy		8.96E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Finland
heavy fuel oil, burned in power plant, FR	Energy		9.15E-02	MJ	1996	Ecoinvent data V2.2 (2010)	France
heavy fuel oil, burned in power plant, GB	Energy		9.14E-02	MJ	2000	Ecoinvent data V2.2 (2010)	United Kingdom
heavy fuel oil, burned in power plant, GR	Energy		9.31E-02	MJ	1985	Ecoinvent data V2.2 (2010)	Greece
heavy fuel oil, burned in power plant, HR	Energy		9.00E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Croatia
heavy fuel oil, burned in power plant, HU	Energy		8.94E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Hungary
heavy fuel oil, burned in power plant, IE	Energy		9.18E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Ireland
heavy fuel oil, burned in power plant, IT	Energy		9.37E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Italy
heavy fuel oil, burned in power plant, NL	Energy		8.74E-02	MJ	1993	Ecoinvent data V2.2 (2010)	Netherlands
heavy fuel oil, burned in power plant, PT	Energy		9.03E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Portugal
heavy fuel oil, burned in power plant, RS	Energy		9.16E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
heavy fuel oil, burned in power plant, SE	Energy		8.98E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Sweden
heavy fuel oil, burned in power plant, SI	Energy		9.13E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Slovenia
heavy fuel oil, burned in power plant, SK	Energy		9.12E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Slovakia
heavy fuel oil, burned in refinery furnace, CH	Energy		9.28E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
heavy fuel oil, burned in refinery furnace, Europe	Energy		8.61E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
light fuel oil, burned in boiler 100kW condensing, non-modulating	Energy		8.86E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
light fuel oil, burned in boiler 100kW, non-modulating	Energy		8.86E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
light fuel oil, burned in boiler 10kW condensing, non-modulating	Energy		8.93E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
light fuel oil, burned in boiler 10kW, non-modulating	Energy		8.93E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
light fuel oil, burned in industrial furnace 1MW, non-modulating, CH	Energy		8.82E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
light fuel oil, burned in industrial furnace 1MW, non-modulating, Europe	Energy		8.67E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
lignite briquette, burned in stove 5-15kW	Energy		1.41E-01	MJ	1992	Ecoinvent data V2.2 (2010)	Europe
lignite briquettes, at plant	Energy		3.29E-02	MJ	1992	Ecoinvent data V2.2 (2010)	Germany
lignite, burned in power plant, AT	Energy		1.09E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
lignite, burned in power plant, BA	Energy		1.07E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Bosnia and Herzegovina
lignite, burned in power plant, CZ	Energy		1.09E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Switzerland
lignite, burned in power plant, DE	Energy		1.12E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
lignite, burned in power plant, ES	Energy		1.08E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
lignite, burned in power plant, FR	Energy		1.10E-01	MJ	2000	Ecoinvent data V2.2 (2010)	France
lignite, burned in power plant, GR	Energy		1.27E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Greece
lignite, burned in power plant, HU	Energy		1.09E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Hungary
lignite, burned in power plant, MK	Energy		1.13E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Macedonia
lignite, burned in power plant, Poland	Energy		1.08E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Poland
lignite, burned in power plant, RS	Energy		1.11E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Serbia and Montenegro
lignite, burned in power plant, SI	Energy		1.07E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Slovenia
lignite, burned in power plant, SK	Energy		1.08E-01	MJ	2005	Ecoinvent data V2.2 (2010)	Slovakia
logs, hardwood, burned in furnace 100kW	Energy		3.27E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
logs, hardwood, burned in furnace 30kW	Energy		3.74E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
logs, hardwood, burned in wood heater 6kW	Energy		4.44E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
logs, mixed, burned in furnace 100kW	Energy		3.77E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
logs, mixed, burned in furnace 30kW	Energy		4.24E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
logs, mixed, burned in wood heater 6kW	Energy		4.94E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
logs, softwood, burned in furnace 100kW	Energy		4.06E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
logs, softwood, burned in furnace 30kW	Energy		4.52E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
logs, softwood, burned in wood heater 6kW	Energy		5.23E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
methane, 96 vol-%, from biogas, high pressure, at consumer	Energy		4.72E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
methane, 96 vol-%, from biogas, low pressure, at consumer	Energy		5.14E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, at consumer	Energy		1.40E-02	MJ	2005	Ecoinvent data V2.2 (2010)	North

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
natural gas, burned in boiler atm. low-NOx condensing non-modulating <100kW	Energy		7.50E-02	MJ	2000	Ecoinvent data V2.2 (2010)	America Europe
natural gas, burned in boiler atmospheric burner non-modulating <100kW	Energy		7.28E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in boiler atmospheric low-NOx non-modulating <100kW	Energy		7.50E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in boiler condensing modulating <100kW	Energy		7.33E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in boiler condensing modulating >100kW	Energy		6.83E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in boiler fan burner low-NOx non-modulating <100kW	Energy		7.67E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in boiler fan burner non-modulating <100kW	Energy		7.33E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in boiler modulating <100kW	Energy		7.33E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in boiler modulating >100kW	Energy		6.83E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in cogen 160kWe Jakobsberg	Energy		7.33E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, burned in cogen 160kWe lambda=1	Energy		7.33E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, burned in cogen 1MWe lean burn, CH	Energy		7.54E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, burned in cogen 1MWe lean burn, Europe	Energy		7.49E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in cogen 200kWe lean burn	Energy		7.56E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, burned in cogen 500kWe lean burn	Energy		7.55E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, burned in cogen 50kWe lean burn	Energy		7.58E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, burned in combined cycle plant, best technology	Energy		6.79E-02	MJ	2002	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in gas motor, for storage, DE	Energy		5.96E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
natural gas, burned in gas motor, for storage, DZ	Energy		5.91E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Algeria
natural gas, burned in gas motor, for storage, Global	Energy		6.70E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Global
natural gas, burned in gas motor, for storage, NL	Energy		5.78E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands
natural gas, burned in gas motor, for storage, NO	Energy		5.98E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Norway
natural gas, burned in gas motor, for storage, RU	Energy		6.09E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Russian Federation
natural gas, burned in gas turbine, CH	Energy		6.66E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, burned in gas turbine, DE	Energy		5.96E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
natural gas, burned in gas turbine, for compressor station, DE	Energy		5.96E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
natural gas, burned in gas turbine, for compressor station, DZ	Energy		5.91E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Algeria
natural gas, burned in gas turbine, for compressor station, NL	Energy		5.78E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands
natural gas, burned in gas turbine, for compressor station, NO	Energy		5.97E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Norway
natural gas, burned in gas turbine, for compressor station, RU	Energy		6.08E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Russian Federation
natural gas, burned in gas turbine, for compressor station, UCTE	Energy		6.70E-02	MJ	2000	Ecoinvent data V2.2 (2010)	UCTE
natural gas, burned in gas turbine, Global	Energy		6.70E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Global
natural gas, burned in gas turbine, NL	Energy		5.78E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands
natural gas, burned in industrial furnace >100kW	Energy		6.82E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in industrial furnace low-NOx >100kW	Energy		7.00E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, burned in Mini CHP plant	Energy		7.46E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, burned in power plant, Alaska Systems Coordinating Council, US	Energy		6.44E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Alaska Systems Coordinating Council, US

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
natural gas, burned in power plant, AT	Energy		7.76E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
natural gas, burned in power plant, BE	Energy		6.01E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Belgium
natural gas, burned in power plant, Central European Power Association	Energy		7.88E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Central European Power Association
natural gas, burned in power plant, DE	Energy		6.84E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
natural gas, burned in power plant, Electric Reliability Council of Texas, US	Energy		6.52E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Electric Reliability Council of Texas, US
natural gas, burned in power plant, ES	Energy		6.64E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
natural gas, burned in power plant, Florida Reliability Coordinating Council, US	Energy		6.48E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Florida Reliability Coordinating Council, US
natural gas, burned in power plant, FR	Energy		6.86E-02	MJ	2000	Ecoinvent data V2.2 (2010)	France
natural gas, burned in power plant, GB	Energy		5.84E-02	MJ	2000	Ecoinvent data V2.2 (2010)	United Kingdom
natural gas, burned in power plant, IT	Energy		6.86E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Italy
natural gas, burned in power plant, JP	Energy		7.47E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Japan
natural gas, burned in power plant, LU	Energy		6.78E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Luxembourg
natural gas, burned in power plant, Midwest Reliability Organization, US	Energy		6.52E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Midwest Reliability Organization, US
natural gas, burned in power plant, NL	Energy		5.94E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands
natural gas, burned in power plant, Nordic Countries Power Association	Energy		6.89E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
natural gas, burned in power plant, Northeast Power Coordinating Council, US	Energy		6.52E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Norwayrtheast Power Coordinating Council, US

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
natural gas, burned in power plant, Reliability First Corporation, US	Energy			6.51E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Reliability First Corporation, US
natural gas, burned in power plant, SERC Reliability Corporation, US	Energy			6.52E-02	MJ	2004	Ecoinvent data V2.2 (2010)	SERC Reliability Corporation, US
natural gas, burned in power plant, Southwest Power Pool, US	Energy			6.54E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Southwest Power Pool, US
natural gas, burned in power plant, UCTE	Energy			6.78E-02	MJ	2000	Ecoinvent data V2.2 (2010)	UCTE
natural gas, burned in power plant, USA	Energy			6.52E-02	MJ	2004	Ecoinvent data V2.2 (2010)	United States
natural gas, burned in power plant, Western Electricity Coordinating Council, US	Energy			6.51E-02	MJ	2004	Ecoinvent data V2.2 (2010)	Western Electricity Coordinating Council, US
natural gas, high pressure, at consumer, AT	Energy			2.23E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Austria
natural gas, high pressure, at consumer, BE	Energy			3.71E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Belgium
natural gas, high pressure, at consumer, CH	Energy			1.16E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, high pressure, at consumer, CH	Energy			1.52E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, high pressure, at consumer, CZ	Energy			2.08E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, high pressure, at consumer, DE	Energy			1.22E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Germany
natural gas, high pressure, at consumer, DK	Energy			4.19E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Denmark
natural gas, high pressure, at consumer, ES	Energy			1.00E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Spain
natural gas, high pressure, at consumer, Europe	Energy			1.14E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
natural gas, high pressure, at consumer, FI	Energy			2.29E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Finland
natural gas, high pressure, at consumer, FR	Energy			1.22E-02	MJ	2001	Ecoinvent data V2.2 (2010)	France
natural gas, high pressure, at consumer, GB	Energy			1.99E-03	MJ	2000	Ecoinvent data V2.2 (2010)	United Kingdom
natural gas, high pressure, at consumer, GR	Energy			2.35E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Greece
natural gas, high pressure, at consumer, HU	Energy			2.25E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Hungary
natural gas, high pressure, at consumer, IE	Energy			4.37E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Ireland
natural gas, high pressure, at consumer, IT	Energy			1.21E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Italy
natural gas, high pressure, at consumer, JP	Energy			1.84E-02	MJ	2005	Ecoinvent data V2.2 (2010)	Japan

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
natural gas, high pressure, at consumer, NL	Energy		3.02E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Netherlands
natural gas, high pressure, at consumer, SE	Energy		4.35E-03	MJ	2000	Ecoinvent data V2.2 (2010)	Sweden
natural gas, high pressure, at consumer, SK	Energy		2.37E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Slovakia
natural gas, sour, burned in production flare	Energy		6.83E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Global
natural gas, sweet, burned in production flare	Energy		6.83E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Global
peat, burned in power plant	Energy		1.08E-01	MJ	2000	Ecoinvent data V2.2 (2010)	Nordic Countries Power Association
pellets, mixed, burned in furnace 15kW	Energy		1.26E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
pellets, mixed, burned in furnace 50kW	Energy		1.19E-02	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
pulverised lignite, at plant	Energy		3.76E-02	MJ	1992	Ecoinvent data V2.2 (2010)	Germany
refinery gas, burned in flare	Energy		5.62E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Global
refinery gas, burned in furnace, CH	Energy		7.00E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Switzerland
refinery gas, burned in furnace, Europe	Energy		6.80E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Europe
sour gas, burned in gas turbine, production	Energy		6.79E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Norway
sweet gas, burned in gas turbine, production	Energy		6.79E-02	MJ	2000	Ecoinvent data V2.2 (2010)	Norway
wood chips, burned in cogen 6400kWth	Energy		2.72E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, burned in cogen 6400kWth, emission control	Energy		8.68E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, burned in cogen ORC 1400kWth	Energy		2.79E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, burned in cogen ORC 1400kWth, emission control	Energy		8.77E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from forest, hardwood, burned in furnace 1000kW	Energy		3.48E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from forest, hardwood, burned in furnace 300kW	Energy		3.55E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from forest, hardwood, burned in furnace 50kW	Energy		4.52E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from forest, mixed, burned in furnace 1000kW	Energy		3.90E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from forest, mixed, burned in furnace 300kW	Energy		3.96E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from forest, mixed, burned in furnace 50kW	Energy		5.08E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
wood chips, from forest, softwood, burned in furnace 1000kW	Energy		4.11E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from forest, softwood, burned in furnace 300kW	Energy		4.17E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from forest, softwood, burned in furnace 50kW	Energy		5.35E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from industry, hardwood, burned in furnace 1000kW	Energy		2.76E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from industry, hardwood, burned in furnace 300kW	Energy		2.87E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from industry, hardwood, burned in furnace 50kW	Energy		3.84E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from industry, mixed, burned in furnace 1000kW	Energy		2.86E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from industry, mixed, burned in furnace 300kW	Energy		3.02E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from industry, mixed, burned in furnace 50kW	Energy		4.14E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from industry, softwood, burned in furnace 1000kW	Energy		2.92E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from industry, softwood, burned in furnace 300kW	Energy		3.09E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
wood chips, from industry, softwood, burned in furnace 50kW	Energy		4.27E-03	MJ	2001	Ecoinvent data V2.2 (2010)	Switzerland
[sulfonyl]urea-compounds, at regional storehouse, CH	Materials	Agriculture	1.01E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
[sulfonyl]urea-compounds, at regional storehouse, Europe	Materials	Agriculture	1.08E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
[thio]carbamate-compounds, at regional storehouse, CH	Materials	Agriculture	9.46E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
[thio]carbamate-compounds, at regional storehouse, Europe	Materials	Agriculture	1.01E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
2,4-D, at regional storehouse, CH	Materials	Agriculture	6.28E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
2,4-D, at regional storehouse, Europe	Materials	Agriculture	6.71E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
acetamide-anillide-compounds, at regional storehouse, CH	Materials	Agriculture	1.20E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
acetamide-anillide-compounds, at regional storehouse, Europe	Materials	Agriculture	1.28E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
aclonifen, at regional storage, Europe	Materials	Agriculture	8.27E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
agricultural machinery, general, production	Materials	Agriculture	3.87E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
agricultural machinery, tillage, production	Materials	Agriculture	4.47E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
alachlor, at regional storehouse, CH	Materials	Agriculture	9.53E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
alachlor, at regional storehouse, Europe	Materials	Agriculture	1.02E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
ammonium nitrate phosphate, as N, at regional storehouse	Materials	Agriculture	5.27E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
ammonium nitrate phosphate, as P2O5, at regional storehouse, Europe	Materials	Agriculture	1.29E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
ammonium nitrate, as N, at regional storehouse, Europe	Materials	Agriculture	8.55E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
ammonium sulphate, as N, at regional storehouse, Europe	Materials	Agriculture	2.69E+00	kg	1998	Ecoinvent data V2.2 (2010)	Europe
application, digested matter from biowaste in agricultural co-digestion, covered, CH	Materials	Agriculture	1.24E-02	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
atrazine, at regional storehouse, CH	Materials	Agriculture	8.78E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
atrazine, at regional storehouse, Europe	Materials	Agriculture	9.38E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
barley grains conventional, Barrois, at farm, FR	Materials	Agriculture	5.59E-01	kg	2004	Ecoinvent data V2.2 (2010)	France
barley grains conventional, Castilla-y-Leon, at farm, ES	Materials	Agriculture	9.28E-01	kg	2004	Ecoinvent data V2.2 (2010)	Spain
barley grains conventional, Saxony-Anhalt, at farm, DE	Materials	Agriculture	4.87E-01	kg	2004	Ecoinvent data V2.2 (2010)	Germany
barley grains extensive, at farm, CH	Materials	Agriculture	4.70E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
barley grains IP, at farm, CH	Materials	Agriculture	3.80E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
barley grains organic, at farm, CH	Materials	Agriculture	4.46E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
barley IP, at feed mill	Materials	Agriculture	4.85E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
barley organic, at feed mill	Materials	Agriculture	4.99E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
barley seed IP, at regional storehouse, CH	Materials	Agriculture	4.14E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
barley seed organic, at regional storehouse, CH	Materials	Agriculture	4.79E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
barley straw extensive, at farm, CH	Materials	Agriculture	1.09E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
barley straw IP, at farm, CH	Materials	Agriculture	9.03E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
barley straw organic, at farm, CH	Materials	Agriculture	7.10E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
benzimidazole-compounds, at regional storehouse, CH	Materials	Agriculture	6.89E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
benzimidazole-compounds, at regional storehouse, Europe	Materials	Agriculture	7.54E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
benzo[thia]diazole-compounds, at regional storehouse, CH	Materials	Agriculture	1.02E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
benzo[thia]diazole-compounds, at regional storehouse, Europe	Materials	Agriculture	1.02E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
benzoic-compounds, at regional storehouse, CH	Materials	Agriculture	9.53E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
benzoic-compounds, at regional storehouse, Europe	Materials	Agriculture	1.02E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
bipyridylium-compounds, at regional storehouse, CH	Materials	Agriculture	9.53E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
bipyridylium-compounds, at regional storehouse, Europe	Materials	Agriculture	1.02E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
calcium ammonium nitrate, as N, at regional storehouse, Europe	Materials	Agriculture	8.66E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
calcium nitrate, as N, at regional storehouse, Europe	Materials	Agriculture	3.85E+00	kg	1998	Ecoinvent data V2.2 (2010)	Europe
captan, at regional storage, Europe	Materials	Agriculture	3.92E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
carbofuran, at regional storehouse, CH	Materials	Agriculture	9.46E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
carbofuran, at regional storehouse, Europe	Materials	Agriculture	1.01E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
chlorothalonil, at regional storage, Europe	Materials	Agriculture	3.62E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
chlorotoluron, at regional storage, Europe	Materials	Agriculture	6.89E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
clover seed IP, at farm, CH	Materials	Agriculture	3.32E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
clover seed IP, at regional storehouse, CH	Materials	Agriculture	3.45E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
compost, at plant, CH	Materials	Agriculture	3.62E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
corn, at farm, USA	Materials	Agriculture	4.33E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States
cotton fibres, at farm, USA	Materials	Agriculture	3.07E+00	kg	2006	Ecoinvent data V2.2 (2010)	United States
cotton fibres, ginned, at farm, CN	Materials	Agriculture	3.48E+00	kg	2007	Ecoinvent data V2.2 (2010)	China
cotton seed, at farm, CN	Materials	Agriculture	3.49E-01	kg	2007	Ecoinvent data V2.2 (2010)	China
cotton seed, at farm, USA	Materials	Agriculture	3.04E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
cotton seed, at regional storehouse, USA	Materials	Agriculture	3.85E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States
cyanazine, at regional storehouse, CH	Materials	Agriculture	9.39E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
cyanazine, at regional storehouse, Europe	Materials	Agriculture	9.96E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
cyclic N-compounds, at regional storehouse, CH	Materials	Agriculture	1.44E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
cyclic N-compounds, at regional storehouse, Europe	Materials	Agriculture	1.53E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
diammonium phosphate, as N, at regional storehouse, Europe	Materials	Agriculture	2.80E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
diammonium phosphate, as P2O5, at regional storehouse, Europe	Materials	Agriculture	1.57E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
diazine-compounds, at regional storehouse, Europe	Materials	Agriculture	1.44E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
diazole-compounds, at regional storehouse, Europe	Materials	Agriculture	1.68E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
dicamba, at regional storehouse, CH	Materials	Agriculture	7.13E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
dicamba, at regional storehouse, Europe	Materials	Agriculture	7.72E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
dimethenamide, at regional storage, Europe	Materials	Agriculture	1.52E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
dinitroaniline-compounds, at regional storehouse, CH	Materials	Agriculture	6.64E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
dinitroaniline-compounds, at regional storehouse, Europe	Materials	Agriculture	6.95E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
diphenylether-compounds, at regional storehouse, CH	Materials	Agriculture	1.13E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
diphenylether-compounds, at regional storehouse, Europe	Materials	Agriculture	1.21E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
dithiocarbamate-compounds, at regional storehouse, CH	Materials	Agriculture	4.69E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
dithiocarbamate-compounds, at regional storehouse, Europe	Materials	Agriculture	5.27E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
diuron, at regional storehouse, CH	Materials	Agriculture	1.01E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
diuron, at regional storehouse, Europe	Materials	Agriculture	1.08E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
dried roughage store, air dried, solar, operation	Materials	Agriculture	3.44E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
dried roughage store, cold-air dried, conventional, operation	Materials	Agriculture	3.79E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
dried roughage store, non ventilated, operation	Materials	Agriculture	1.54E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
fava beans IP, at farm	Materials	Agriculture	9.55E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
fava beans IP, at feed mill	Materials	Agriculture	1.07E+00	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
fava beans organic, at farm	Materials	Agriculture	9.59E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
fodder beets IP, at farm	Materials	Agriculture	3.40E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
folpet, at regional storage, Europe	Materials	Agriculture	3.72E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
fosetyl-Al, at regional storage, Europe	Materials	Agriculture	4.72E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
fungicides, at regional storehouse, Europe	Materials	Agriculture	1.06E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
glyphosate, at regional storehouse, CH	Materials	Agriculture	1.01E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
glyphosate, at regional storehouse, Europe	Materials	Agriculture	1.06E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
grain drying, high temperature, CH	Materials	Agriculture	6.02E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
grain drying, low temperature, CH	Materials	Agriculture	7.79E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
grain maize IP, at farm	Materials	Agriculture	5.45E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
grain maize IP, at feed mill	Materials	Agriculture	5.92E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
grain maize organic, at farm	Materials	Agriculture	4.23E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
grain maize organic, at feed mill	Materials	Agriculture	4.71E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
grass drying, CH	Materials	Agriculture	4.51E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
grass from meadow intensive IP, at field	Materials	Agriculture	2.03E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
grass from meadow intensive, organic, at field	Materials	Agriculture	1.64E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
grass from natural meadow extensive IP, at field	Materials	Agriculture	9.24E-02	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
grass from natural meadow extensive organic, at field	Materials	Agriculture	9.21E-02	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
grass from natural meadow intensive IP, at field	Materials	Agriculture	1.80E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
grass from natural meadow intensive organic, at field	Materials	Agriculture	1.40E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
grass seed IP, at farm, CH	Materials	Agriculture	1.91E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
grass seed IP, at regional storehouse, CH	Materials	Agriculture	2.04E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
grass seed organic, at regional storehouse, CH	Materials	Agriculture	1.54E+00	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
grass silage IP, at farm	Materials	Agriculture	2.20E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
grass silage organic, at farm	Materials	Agriculture	1.68E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
growth regluators, at regional storehouse, Europe	Materials	Agriculture	7.72E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
harvester, production	Materials	Agriculture	4.57E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
hay extensive, at farm	Materials	Agriculture	9.53E-02	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
hay intensive IP, at farm	Materials	Agriculture	2.24E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
hay intensive organic, at farm	Materials	Agriculture	1.90E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
herbicides, at regional storehouse, Europe	Materials	Agriculture	1.02E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
horn meal, at regional storehouse, CH	Materials	Agriculture	2.93E-01	kg	1993	Ecoinvent data V2.2 (2010)	Switzerland
husked nuts harvesting, at farm	Materials	Agriculture	6.15E-05	kg	1995	Ecoinvent data V2.2 (2010)	Philippines
insecticides, at regional storehouse, Europe	Materials	Agriculture	1.67E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
isoproturon, at regional storage, Europe	Materials	Agriculture	7.18E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
jute fibres, irrigated system, at farm	Materials	Agriculture	6.14E-01	kg	2007	Ecoinvent data V2.2 (2010)	India
jute fibres, rainfed system, at farm	Materials	Agriculture	5.72E-01	kg	2007	Ecoinvent data V2.2 (2010)	India
jute stalks, from fibre production, irrigated system, at farm	Materials	Agriculture	1.90E-02	kg	2007	Ecoinvent data V2.2 (2010)	India
jute stalks, from fibre production, rainfed system, at farm	Materials	Agriculture	1.77E-02	kg	2007	Ecoinvent data V2.2 (2010)	India
kenaf fibres, at farm	Materials	Agriculture	5.78E-01	kg	2007	Ecoinvent data V2.2 (2010)	India
kenaf stalks, from fibre production, at farm	Materials	Agriculture	1.79E-02	kg	2007	Ecoinvent data V2.2 (2010)	India
lime, algae, at regional storehouse, CH	Materials	Agriculture	2.05E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
lime, from carbonation, at regional storehouse, CH	Materials	Agriculture	1.17E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
linuron, at regional storehouse, CH	Materials	Agriculture	1.01E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
linuron, at regional storehouse, Europe	Materials	Agriculture	1.08E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
maize drying, CH	Materials	Agriculture	2.75E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
maize seed IP, at farm, CH	Materials	Agriculture	1.80E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
maize seed IP, at regional storehouse, CH	Materials	Agriculture	1.93E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
maize seed organic, at farm, CH	Materials	Agriculture	1.25E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
maize seed organic, at regional storehouse, CH	Materials	Agriculture	1.37E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
maize starch, at plant	Materials	Agriculture	1.21E+00	kg	2002	Ecoinvent data V2.2 (2010)	Germany
mancozeb, at regional storage, Europe	Materials	Agriculture	5.27E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
maneb, at regional storehouse, CH	Materials	Agriculture	4.69E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
maneb, at regional storehouse, Europe	Materials	Agriculture	5.27E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
MCPA, at regional storehouse, CH	Materials	Agriculture	6.28E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
MCPA, at regional storehouse, Europe	Materials	Agriculture	6.71E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
mecoprop, at regional storage, Europe	Materials	Agriculture	5.43E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
metaldehyde, at regional storage, Europe	Materials	Agriculture	1.91E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
metamitron, at regional storage, Europe	Materials	Agriculture	6.31E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
metolachlor, at regional storehouse, CH	Materials	Agriculture	8.20E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
metolachlor, at regional storehouse, Europe	Materials	Agriculture	8.79E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
milking, CH	Materials	Agriculture	1.63E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
monoammonium phosphate, as N, at regional storehouse, Europe	Materials	Agriculture	2.83E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
monoammonium phosphate, as P2O5, at regional storehouse, Europe	Materials	Agriculture	1.61E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
napropamide, at regional storage, Europe	Materials	Agriculture	9.83E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
nitrile-compounds, at regional storehouse, CH	Materials	Agriculture	1.06E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
nitrile-compounds, at regional storehouse, Europe	Materials	Agriculture	1.13E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
nitro-compounds, at regional storehouse, CH	Materials	Agriculture	9.53E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
nitro-compounds, at regional storehouse, Europe	Materials	Agriculture	1.02E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
orbencarb, at regional storage, Europe	Materials	Agriculture	1.06E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
organophosphorus-compounds, at regional storehouse, CH	Materials	Agriculture	7.23E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
organophosphorus-compounds, at regional storehouse, Europe	Materials	Agriculture	7.79E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
palm fruit bunches, at farm	Materials	Agriculture	4.15E-01	kg	2006	Ecoinvent data V2.2 (2010)	Malaysia
parathion, at regional storehouse, CH	Materials	Agriculture	7.23E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
parathion, at regional storehouse, Europe	Materials	Agriculture	7.79E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
pea seed IP, at regional storehouse, CH	Materials	Agriculture	9.62E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
pea seed organic, at regional storehouse, CH	Materials	Agriculture	1.01E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
pendimethalin, at regional storage, Europe	Materials	Agriculture	5.67E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
pesticide unspecified, at regional storehouse, CH	Materials	Agriculture	9.40E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
pesticide unspecified, at regional storehouse, Europe	Materials	Agriculture	1.01E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
phenoxy-compounds, at regional storehouse, CH	Materials	Agriculture	6.28E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
phenoxy-compounds, at regional storehouse, Europe	Materials	Agriculture	6.71E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
phtalamide-compounds, at regional storehouse, CH	Materials	Agriculture	9.92E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
phtalamide-compounds, at regional storehouse, Europe	Materials	Agriculture	1.06E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
potassium chloride, as K2O, at regional storehouse, Europe	Materials	Agriculture	4.99E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
potassium nitrate, as K2O, at regional storehouse, Europe	Materials	Agriculture	8.70E-01	kg	1999	Ecoinvent data V2.2 (2010)	Europe
potassium nitrate, as N, at regional storehouse, Europe	Materials	Agriculture	1.60E+01	kg	1999	Ecoinvent data V2.2 (2010)	Europe
potassium sulphate, as K2O, at regional storehouse, Europe	Materials	Agriculture	1.44E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
potato grading, CH	Materials	Agriculture	1.20E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
potato seed IP, at farm, CH	Materials	Agriculture	1.65E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
potato seed IP, at regional storehouse, CH	Materials	Agriculture	2.16E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
potato seed organic, at farm, CH	Materials	Agriculture	1.54E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
potato seed organic, at regional storehouse, CH	Materials	Agriculture	2.05E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
potato starch, at plant	Materials	Agriculture	7.17E-01	kg	2002	Ecoinvent data V2.2 (2010)	Germany
potatoes IP, at farm	Materials	Agriculture	1.08E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
potatoes organic, at farm	Materials	Agriculture	1.26E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
potatoes, at farm	Materials	Agriculture	1.61E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States
poultry manure, dried, at regional storehouse, CH	Materials	Agriculture	1.08E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
propachlor, at regional storehouse, CH	Materials	Agriculture	1.20E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
propachlor, at regional storehouse, Europe	Materials	Agriculture	1.28E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
prosulfocarb, at regional storage, Europe	Materials	Agriculture	6.44E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
protein peas conventional, Barrois, at farm	Materials	Agriculture	6.87E-01	kg	2004	Ecoinvent data V2.2 (2010)	France
protein peas conventional, Castilla-y-Leon, at farm	Materials	Agriculture	1.25E+00	kg	2004	Ecoinvent data V2.2 (2010)	Spain
protein peas conventional, Saxony-Anhalt, at farm	Materials	Agriculture	6.50E-01	kg	2004	Ecoinvent data V2.2 (2010)	Germany
protein peas IP, at feed mill	Materials	Agriculture	9.43E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
protein peas, IP, at farm	Materials	Agriculture	8.31E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
protein peas, organic, at farm	Materials	Agriculture	8.91E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
pyretroid-compounds, at regional storehouse, CH	Materials	Agriculture	1.65E+01	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
pyretroid-compounds, at regional storehouse, Europe	Materials	Agriculture	1.76E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
pyridazine-compounds, at regional storehouse, CH	Materials	Agriculture	9.53E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
pyridazine-compounds, at regional storehouse, Europe	Materials	Agriculture	1.02E+01	kg	2010	Ecoinvent data V2.2 (2010)	Europe
pyridine-compounds, at regional storehouse, Europe	Materials	Agriculture	9.89E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
rape seed conventional, at farm	Materials	Agriculture	1.33E+00	kg	2006	Ecoinvent data V2.2 (2010)	Germany
rape seed conventional, Barrois, at farm	Materials	Agriculture	1.27E+00	kg	2004	Ecoinvent data V2.2 (2010)	France
rape seed conventional, Saxony-Anhalt, at farm	Materials	Agriculture	7.77E-01	kg	2004	Ecoinvent data V2.2 (2010)	Germany
rape seed extensive, at farm	Materials	Agriculture	9.54E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
rape seed IP, at farm	Materials	Agriculture	9.17E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
rape seed IP, at regional storehouse, CH	Materials	Agriculture	1.74E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
rape seed organic, at regional storehouse, CH	Materials	Agriculture	1.32E+00	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
rape seed, at farm	Materials	Agriculture	1.89E+00	kg	2006	Ecoinvent data V2.2 (2010)	United States
rape seed, organic, at farm	Materials	Agriculture	6.83E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
rice seed, at regional storehouse, USA	Materials	Agriculture	1.95E+00	kg	2006	Ecoinvent data V2.2 (2010)	United States
rice, at farm	Materials	Agriculture	1.90E+00	kg	2006	Ecoinvent data V2.2 (2010)	United States
rye grains conventional, at farm	Materials	Agriculture	5.14E-01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
rye grains extensive, at farm	Materials	Agriculture	3.73E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
rye grains IP, at farm	Materials	Agriculture	3.04E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
rye grains organic, at farm	Materials	Agriculture	4.24E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
rye IP, at feed mill	Materials	Agriculture	3.84E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
rye organic, at feed mill	Materials	Agriculture	4.77E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
rye seed IP, at regional storehouse, CH	Materials	Agriculture	3.38E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
rye seed organic, at regional storehouse, CH	Materials	Agriculture	4.57E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
rye straw conventional, at farm	Materials	Agriculture	1.09E-01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
rye straw extensive, at farm	Materials	Agriculture	6.98E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
rye straw IP, at farm	Materials	Agriculture	5.87E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
rye straw organic, at farm	Materials	Agriculture	5.28E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
sheep for slaughtering, live weight, at farm, USA	Materials	Agriculture	4.44E+00	kg	2006	Ecoinvent data V2.2 (2010)	United States
silage maize IP, at farm	Materials	Agriculture	5.32E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
silage maize organic, at farm	Materials	Agriculture	3.76E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
single superphosphate, as P2O5, at regional storehouse, Europe	Materials	Agriculture	2.62E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
slurry tanker, production	Materials	Agriculture	3.41E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
solid manure loading and spreading, by hydraulic loader and spreader, CH	Materials	Agriculture	3.17E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
soy beans IP, at farm	Materials	Agriculture	1.32E+00	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
soy beans organic, at farm	Materials	Agriculture	1.16E+00	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
soybeans, at farm, BR	Materials	Agriculture	1.60E+00	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
soybeans, at farm, USA	Materials	Agriculture	3.86E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States
stone meal, at regional storehouse, CH	Materials	Agriculture	6.06E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
straw IP, at farm	Materials	Agriculture	9.18E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
straw organic, at farm	Materials	Agriculture	6.13E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
straw, from straw areas, at field	Materials	Agriculture	9.60E-02	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
sugar beet seed IP, at regional storehouse, CH	Materials	Agriculture	2.06E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
sugar beets IP, at farm	Materials	Agriculture	5.37E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
sugar, from sugar beet, at sugar refinery	Materials	Agriculture	5.06E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
sugar, from sugarcane, at sugar refinery	Materials	Agriculture	2.05E-01	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
sugarcane, at farm	Materials	Agriculture	2.21E-02	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
sunflower conventional, Castilla-y-Leon, at farm	Materials	Agriculture	1.24E+00	kg	2004	Ecoinvent data V2.2 (2010)	Spain
sunflower IP, at farm	Materials	Agriculture	1.02E+00	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
sweet sorghum grains, at farm	Materials	Agriculture	2.92E-01	kg	2006	Ecoinvent data V2.2 (2010)	China
sweet sorghum stem, at farm	Materials	Agriculture	3.14E-02	kg	2006	Ecoinvent data V2.2 (2010)	China
tallow, at plant, CH	Materials	Agriculture	6.64E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
thomas meal, as P2O5, at regional storehouse, Europe	Materials	Agriculture	6.89E-01	kg	1997	Ecoinvent data V2.2 (2010)	Europe
tractor, production	Materials	Agriculture	6.12E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
trailer, production	Materials	Agriculture	4.43E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
triazine-compounds, at regional storehouse, CH	Materials	Agriculture	9.39E+00	kg	2010	Ecoinvent data V2.2 (2010)	Switzerland
triazine-compounds, at regional storehouse, Europe	Materials	Agriculture	9.96E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
triple superphosphate, as P2O5, at regional storehouse, Europe	Materials	Agriculture	2.03E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
wheat grains conventional, Barrois, at farm	Materials	Agriculture	6.27E-01	kg	2004	Ecoinvent data V2.2 (2010)	France

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
wheat grains conventional, Castilla-y-Leon, at farm	Materials	Agriculture	7.52E-01	kg	2004	Ecoinvent data V2.2 (2010)	Spain
wheat grains conventional, Saxony-Anhalt, at farm	Materials	Agriculture	5.50E-01	kg	2004	Ecoinvent data V2.2 (2010)	Germany
wheat grains extensive, at farm	Materials	Agriculture	6.17E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
wheat grains IP, at farm	Materials	Agriculture	5.43E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
wheat grains organic, at farm	Materials	Agriculture	4.95E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
wheat grains, at farm	Materials	Agriculture	6.45E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States
wheat IP, at feed mill	Materials	Agriculture	6.25E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
wheat organic, at feed mill	Materials	Agriculture	5.48E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
wheat seed IP, at regional storehouse, CH	Materials	Agriculture	5.77E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
wheat seed organic, at regional storehouse, CH	Materials	Agriculture	5.28E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
wheat straw extensive, at farm	Materials	Agriculture	9.22E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
wheat straw IP, at farm	Materials	Agriculture	8.24E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
wheat straw organic, at farm	Materials	Agriculture	5.55E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
wool, sheep, at farm, USA	Materials	Agriculture	1.98E+01	kg	2006	Ecoinvent data V2.2 (2010)	United States
bagasse, from sugarcane, at sugar refinery	Materials	Biofuels/feedstocks	1.16E-02	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
bagasse, from sweet sorghum, at distillery	Materials	Biofuels/feedstocks	6.32E-03	kg	2006	Ecoinvent data V2.2 (2010)	China
beet chips, at fermentation plant	Materials	Biofuels/feedstocks	7.87E-02	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
biowaste, at collection point	Materials	Biofuels/feedstocks	1.34E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
DDGS, from corn, at distillery	Materials	Biofuels/feedstocks	9.30E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States
DDGS, from potatoes, at distillery	Materials	Biofuels/feedstocks	6.69E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
DDGS, from rye, at distillery	Materials	Biofuels/feedstocks	7.77E-01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
digested matter, application in agriculture	Materials	Biofuels/feedstocks	7.51E-03	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
disposal, biowaste, to agricultural co-fermentation, covered	Materials	Biofuels/feedstocks	4.01E-02	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
disposal, biowaste, to anaerobic digestion	Materials	Biofuels/feedstocks	2.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
disposal, fat and oil, to agricultural co-fermentation, covered	Materials	Biofuels/feedstocks	1.46E-02	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
electricity, wood, at distillery	Materials	Biofuels/feedstocks	3.25E-02	kg	2008	Ecoinvent data V2.2 (2010)	Sweden
ethanol, 95% in H2O, from corn, at distillery	Materials	Biofuels/feedstocks	1.90E+00	kg	2006	Ecoinvent data V2.2 (2010)	United States
ethanol, 95% in H2O, from grass, at fermentation plant	Materials	Biofuels/feedstocks	5.96E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
ethanol, 95% in H2O, from potatoes, at distillery	Materials	Biofuels/feedstocks	2.10E+00	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 95% in H2O, from rye, at distillery	Materials	Biofuels/feedstocks	2.15E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
ethanol, 95% in H2O, from sugar beet molasses, at distillery	Materials	Biofuels/feedstocks	7.06E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 95% in H2O, from sugar beets, at fermentation plant	Materials	Biofuels/feedstocks	7.19E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 95% in H2O, from sugar cane, at fermentation plant	Materials	Biofuels/feedstocks	4.08E-01	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
ethanol, 95% in H2O, from sugarcane molasses, at sugar refinery	Materials	Biofuels/feedstocks	4.30E-01	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
ethanol, 95% in H2O, from sweet sorghum, at distillery	Materials	Biofuels/feedstocks	5.97E-01	kg	2006	Ecoinvent data V2.2 (2010)	China
ethanol, 95% in H2O, from whey, at fermentation plant	Materials	Biofuels/feedstocks	3.31E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 95% in H2O, from wood, at distillery, CH	Materials	Biofuels/feedstocks	5.38E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 95% in H2O, from wood, at distillery, SE	Materials	Biofuels/feedstocks	4.56E-01	kg	2008	Ecoinvent data V2.2 (2010)	Sweden
ethanol, 99.7% in H2O, from biomass, at distillation, BR	Materials	Biofuels/feedstocks	4.12E-01	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
ethanol, 99.7% in H2O, from biomass, at distillation, CH	Materials	Biofuels/feedstocks	6.17E-01	kg	2007	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 99.7% in H2O, from biomass, at distillation, CN	Materials	Biofuels/feedstocks	5.99E-01	kg	2006	Ecoinvent data V2.2 (2010)	China
ethanol, 99.7% in H2O, from biomass, at distillation, Europe	Materials	Biofuels/feedstocks	2.23E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
ethanol, 99.7% in H2O, from biomass, at distillation, USA	Materials	Biofuels/feedstocks	1.98E+00	kg	2006	Ecoinvent data V2.2 (2010)	United States
ethanol, 99.7% in H2O, from biomass, at service station	Materials	Biofuels/feedstocks	6.51E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 99.7% in H2O, from biomass, production BR, at service station	Materials	Biofuels/feedstocks	5.50E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 99.7% in H2O, from biomass, production CN, at service station	Materials	Biofuels/feedstocks	8.36E-01	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
ethanol, 99.7% in H2O, from biomass, production US, at service station	Materials	Biofuels/feedstocks	2.17E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 99.7% in H2O, from biomass, production, Europe, at service station	Materials	Biofuels/feedstocks	2.31E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 99.7% in H2O, from Swedish wood, at service station	Materials	Biofuels/feedstocks	6.50E-01	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
ethanol, 99.7% in H2O, from wood, at distillation	Materials	Biofuels/feedstocks	5.30E-01	kg	2008	Ecoinvent data V2.2 (2010)	Sweden
ethyl tert-butyl ether, from bioethanol, at plant	Materials	Biofuels/feedstocks	1.50E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
grass fibres, at digestion	Materials	Biofuels/feedstocks	1.06E+00	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
grass fibres, at fermentation	Materials	Biofuels/feedstocks	5.54E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
methane, 96 vol-%, from biogas, from high pressure network, at service station	Materials	Biofuels/feedstocks	2.20E+00	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
methane, 96 vol-%, from biogas, from low pressure network, at service station	Materials	Biofuels/feedstocks	2.46E+00	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
methane, 96 vol-%, from biogas, from medium pressure network, at service station	Materials	Biofuels/feedstocks	2.22E+00	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
methane, 96 vol-%, from biogas, production mix, at service station	Materials	Biofuels/feedstocks	2.21E+00	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
methanol, from biomass, at regional storage	Materials	Biofuels/feedstocks	3.03E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
methanol, from synthetic gas, at plant	Materials	Biofuels/feedstocks	2.69E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
molasses, from sugar beet, at sugar refinery	Materials	Biofuels/feedstocks	1.08E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
palm kernel meal, at oil mill	Materials	Biofuels/feedstocks	1.98E-01	kg	2006	Ecoinvent data V2.2 (2010)	Malaysia
palm methyl ester, at esterification plant	Materials	Biofuels/feedstocks	1.69E+00	kg	2006	Ecoinvent data V2.2 (2010)	Malaysia
palm methyl ester, production Malaysia, at service station	Materials	Biofuels/feedstocks	1.83E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
petrol, 85% vol. ethanol, from biomass, at service station	Materials	Biofuels/feedstocks	1.17E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
petrol, 85% vol. ethanol, from Swedish wood, at service station	Materials	Biofuels/feedstocks	6.70E-01	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
protein concentrate, from whey, at fermentation	Materials	Biofuels/feedstocks	1.23E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
protInsulators, from grass, at digestion	Materials	Biofuels/feedstocks	1.22E+00	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
protInsulators, from grass, at fermentation	Materials	Biofuels/feedstocks	4.01E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
pulps, from sugar beet, at sugar refinery	Materials	Biofuels/feedstocks	1.38E-02	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
rape meal, at oil mill, CH	Materials	Biofuels/feedstocks	4.02E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
rape meal, at oil mill, Europe	Materials	Biofuels/feedstocks	5.82E-01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
rape methyl ester, at esterification plant, CH	Materials	Biofuels/feedstocks	2.06E+00	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
rape methyl ester, at esterification plant, Europe	Materials	Biofuels/feedstocks	2.62E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
rape methyl ester, at regional storage	Materials	Biofuels/feedstocks	2.09E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
rape methyl ester, production, Europe, at service station	Materials	Biofuels/feedstocks	2.70E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
rape oil, at oil mill, CH	Materials	Biofuels/feedstocks	1.88E+00	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
rape oil, at oil mill, Europe	Materials	Biofuels/feedstocks	2.73E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
rape oil, at regional storage	Materials	Biofuels/feedstocks	1.91E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
soybean meal, at oil mill, BR	Materials	Biofuels/feedstocks	1.36E+00	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
soybean meal, at oil mill, USA	Materials	Biofuels/feedstocks	4.56E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States
soybean methyl ester, at esterification plant, BR	Materials	Biofuels/feedstocks	3.75E+00	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
soybean methyl ester, at esterification plant, USA	Materials	Biofuels/feedstocks	1.07E+00	kg	2006	Ecoinvent data V2.2 (2010)	United States
soybean methyl ester, production BR, at service station	Materials	Biofuels/feedstocks	3.92E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
soybean methyl ester, production US, at service station	Materials	Biofuels/feedstocks	1.25E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
soybean oil, at oil mill, BR	Materials	Biofuels/feedstocks	3.77E+00	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
soybean oil, at oil mill, USA	Materials	Biofuels/feedstocks	9.20E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States
syrup, from sugar beet molasses, at distillery	Materials	Biofuels/feedstocks	2.88E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
vegetable oil methyl ester, at esterification plant	Materials	Biofuels/feedstocks	3.08E-01	kg	2006	Ecoinvent data V2.2 (2010)	France
vegetable oil methyl ester, production FR, at service station	Materials	Biofuels/feedstocks	3.72E-01	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
vegetable oil, from waste cooking oil, at plant, CH	Materials	Biofuels/feedstocks	4.14E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
vegetable oil, from waste cooking oil, at plant, FR	Materials	Biofuels/feedstocks	1.59E-01	kg	2006	Ecoinvent data V2.2 (2010)	France
vinasse, at fermentation plant	Materials	Biofuels/feedstocks	2.05E-02	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
yeast paste, from whey, at fermentation	Materials	Biofuels/feedstocks	1.04E+00	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
1,1-difluoroethane, HFC-152a, at plant	Materials	Chemicals	5.45E+00	kg	2006	Ecoinvent data V2.2 (2010)	United States

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
1,1-dimethylcyclopentane, from naphtha, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
1-butanol, propylene hydroformylation, at plant	Materials	Chemicals	2.61E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
1-pentanol, at plant	Materials	Chemicals	4.54E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
1-propanol, at plant	Materials	Chemicals	3.81E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
2,3-dimethylbutan, from naphtha, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
2-butanol, at plant	Materials	Chemicals	4.03E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
2-methyl-1-butanol, at plant	Materials	Chemicals	4.54E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
2-methyl-2-butanol, at plant	Materials	Chemicals	3.26E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
2-methylpentane, from naphtha, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
3-methyl-1-butanol, at plant	Materials	Chemicals	4.54E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
3-methyl-1-butyl acetate, at plant	Materials	Chemicals	5.05E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
4-methyl-2-pentanone, at plant	Materials	Chemicals	4.14E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
acetaldehyde, at plant	Materials	Chemicals	1.37E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
acetic acid from acetaldehyde, at plant	Materials	Chemicals	2.53E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
acetic acid from butane, at plant	Materials	Chemicals	1.18E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
acetic acid, 98% in H2O, at plant	Materials	Chemicals	1.56E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
acetic anhydride from acetaldehyde, at plant	Materials	Chemicals	2.53E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
acetic anhydride from ketene, at plant	Materials	Chemicals	3.78E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
acetic anhydride, at plant	Materials	Chemicals	3.49E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
acetone cyanohydrin, at plant	Materials	Chemicals	3.88E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
acetone from butane, at plant	Materials	Chemicals	1.18E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
acetone, liquid, at plant	Materials	Chemicals	2.23E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
acetonitrile, at plant	Materials	Chemicals	3.05E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
acetylene, at regional storehouse	Materials	Chemicals	2.30E+00	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
acrylic acid, at plant	Materials	Chemicals	2.26E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
acrylonitrile from Sohio process, at plant	Materials	Chemicals	3.05E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
adipic acid, at plant	Materials	Chemicals	2.54E+01	kg	2001	Ecoinvent data V2.2 (2010)	Europe
AKD sizer, in paper production, at plant	Materials	Chemicals	2.58E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
alkylbenzene, linear, at plant	Materials	Chemicals	1.96E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
allyl chloride, from reacting propylene and chlorine, at plant	Materials	Chemicals	2.28E+00	kg	2004	Ecoinvent data V2.2 (2010)	Europe
aluminium hydroxide, at plant	Materials	Chemicals	6.63E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium oxide, at plant	Materials	Chemicals	1.24E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium sulphate, powder, at plant	Materials	Chemicals	4.93E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
ammonia, liquid, at regional storehouse, CH	Materials	Chemicals	2.10E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
ammonia, liquid, at regional storehouse, Europe	Materials	Chemicals	2.10E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ammonia, partial oxidation, liquid, at plant	Materials	Chemicals	2.90E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ammonia, steam reforming, liquid, at plant	Materials	Chemicals	1.91E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ammonium bicarbonate, at plant	Materials	Chemicals	1.18E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
ammonium carbonate, at plant	Materials	Chemicals	1.55E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ammonium chloride from chlorosilane, at plant	Materials	Chemicals	3.06E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
ammonium chloride, at plant	Materials	Chemicals	1.05E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
ammonium thiocyanate, at plant	Materials	Chemicals	2.05E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
aniline, at plant	Materials	Chemicals	4.88E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
anionic resin, at plant	Materials	Chemicals	3.78E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
anthraquinone, at plant	Materials	Chemicals	1.88E+01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
argon, crude, liquid, at plant	Materials	Chemicals	2.74E-01	kg	2001	Ecoinvent data V2.2 (2010)	Europe
argon, liquid, at plant	Materials	Chemicals	3.13E-01	kg	2001	Ecoinvent data V2.2 (2010)	Europe
arsine, at plant	Materials	Chemicals	6.70E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
barite, at plant	Materials	Chemicals	1.88E-01	kg	1978	Ecoinvent data V2.2 (2010)	Europe
benzal chloride, at plant	Materials	Chemicals	2.61E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
benzaldehyde, at plant	Materials	Chemicals	4.95E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
benzene, at plant	Materials	Chemicals	1.79E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
benzyl alcohol, at plant	Materials	Chemicals	4.15E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
benzyl chloride, at plant	Materials	Chemicals	2.52E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
biocides, for paper production, unspecified, at plant	Materials	Chemicals	5.65E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
bisphenol A, powder, at plant	Materials	Chemicals	4.88E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
Borax, anhydrous, powder, at plant	Materials	Chemicals	1.65E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
boric acid, anhydrous, powder, at plant	Materials	Chemicals	7.13E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
boric oxide, at plant	Materials	Chemicals	1.77E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
boron carbide, at plant	Materials	Chemicals	1.40E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
boron trifluoride, at plant	Materials	Chemicals	3.62E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
butane-1,4-diol, at plant	Materials	Chemicals	4.35E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
butanes from butenes, at plant	Materials	Chemicals	4.03E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
butyl acetate, at plant	Materials	Chemicals	3.55E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
butyl acrylate, at plant	Materials	Chemicals	4.34E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
butyrolactone	Materials	Chemicals	3.29E+00	kg	2007	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
calcium borates, at plant	Materials	Chemicals	8.18E-02	kg	2000	Ecoinvent data V2.2 (2010)	Turkey
calcium carbide, technical grade, at plant	Materials	Chemicals	3.71E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
calcium chloride, CaCl2, at plant	Materials	Chemicals	8.54E-01	kg	1999	Ecoinvent data V2.2 (2010)	Europe
calcium chloride, CaCl2, at regional storage	Materials	Chemicals	8.98E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
calcium chloride, from hypochlorination of allyl chloride, at plant	Materials	Chemicals	4.83E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
carbon black, at plant	Materials	Chemicals	2.37E+00	kg	2000	Ecoinvent data V2.2 (2010)	Global
carbon dioxide liquid, at plant	Materials	Chemicals	8.16E-01	kg	1999	Ecoinvent data V2.2 (2010)	Europe
carbon disulfide, at plant	Materials	Chemicals	8.39E-01	kg	2006	Ecoinvent data V2.2 (2010)	Global
carbon monoxide, CO, at plant	Materials	Chemicals	1.55E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
carbon tetrachloride, at plant	Materials	Chemicals	1.64E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
cationic resin, at plant	Materials	Chemicals	1.41E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
cerium concentrate, 60% cerium oxide, at plant	Materials	Chemicals	8.31E+00	kg	2005	Ecoinvent data V2.2 (2010)	China
chemicals inorganic, at plant	Materials	Chemicals	1.86E+00	kg	2000	Ecoinvent data V2.2 (2010)	Global
chemicals organic, at plant	Materials	Chemicals	1.90E+00	kg	2000	Ecoinvent data V2.2 (2010)	Global
chlorine dioxide, at plant	Materials	Chemicals	6.24E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
chlorine, gaseous, diaphragm cell, at plant	Materials	Chemicals	9.47E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
chlorine, gaseous, lithium chloride electrolysis, at plant	Materials	Chemicals	2.11E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
chlorine, gaseous, membrane cell, at plant	Materials	Chemicals	9.22E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
chlorine, gaseous, mercury cell, at plant	Materials	Chemicals	1.09E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
chlorine, liquid, production mix, at plant	Materials	Chemicals	1.06E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
chloroacetic acid, at plant	Materials	Chemicals	2.15E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
chlorodifluoromethane, at plant	Materials	Chemicals	7.53E+01	kg	1999	Ecoinvent data V2.2 (2010)	Netherlands
chloromethyl methyl ether, at plant	Materials	Chemicals	1.65E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
chromium oxide, flakes, at plant	Materials	Chemicals	7.04E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
concentrated lithium brine (6.7 % Li), at plant	Materials	Chemicals	1.79E-02	kg	2010	Ecoinvent data V2.2 (2010)	Global
copper carbonate, at plant	Materials	Chemicals	1.88E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
copper oxide, at plant	Materials	Chemicals	1.95E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
crude coconut oil, at plant	Materials	Chemicals	1.87E-01	kg	1995	Ecoinvent data V2.2 (2010)	Philippines
cryolite, at plant	Materials	Chemicals	2.94E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
cumene, at plant	Materials	Chemicals	2.31E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
cyclohexane, at plant	Materials	Chemicals	2.31E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
cyclohexanol, at plant	Materials	Chemicals	3.09E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
cyclohexanone, at plant	Materials	Chemicals	4.40E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
deinking emulsion, in paper production, at plant	Materials	Chemicals	7.94E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
diborane, at plant	Materials	Chemicals	4.60E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
dichloromethane, at plant	Materials	Chemicals	3.39E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
dichloropropene, from reacting propylene and chlorine, at plant	Materials	Chemicals	2.11E+00	kg	2004	Ecoinvent data V2.2 (2010)	Europe
diethanolamine, at plant	Materials	Chemicals	3.66E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
diethyl ether, at plant	Materials	Chemicals	1.25E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
diethylene glycol, at plant	Materials	Chemicals	1.07E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
dimethyl ether, at plant	Materials	Chemicals	1.52E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
dimethyl sulfoxide, at plant	Materials	Chemicals	1.30E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
dimethyl sulphate, at plant	Materials	Chemicals	1.30E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
dimethylacetamide, at plant	Materials	Chemicals	2.34E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
dimethylamine borane, at plant	Materials	Chemicals	2.65E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
dimethylamine, at plant	Materials	Chemicals	1.28E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
dioxane, at plant	Materials	Chemicals	3.46E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
dipropylene glycol monomethyl ether, at plant	Materials	Chemicals	4.36E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
DTPA, diethylenetriaminepentaacetic acid, at plant	Materials	Chemicals	4.81E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
EDTA, ethylenediaminetetraacetic acid, at plant	Materials	Chemicals	4.81E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
epichlorohydrin, from hypochlorination of allyl chloride, at plant	Materials	Chemicals	3.37E+00	kg	2004	Ecoinvent data V2.2 (2010)	Europe
esters of versatic acid, at plant	Materials	Chemicals	2.04E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ethanol from ethylene, at plant	Materials	Chemicals	1.25E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
ethyl acetate from butane, at plant	Materials	Chemicals	1.18E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
ethyl acetate, at plant	Materials	Chemicals	2.84E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
ethyl benzene, at plant	Materials	Chemicals	2.23E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ethylene carbonate, at plant	Materials	Chemicals	1.42E+00	kg	2010	Ecoinvent data V2.2 (2010)	China
ethylene dichloride, at plant	Materials	Chemicals	1.31E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ethylene glycol diethyl ether, at plant	Materials	Chemicals	3.24E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
ethylene glycol dimethyl ether, at plant	Materials	Chemicals	2.25E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
ethylene glycol monoethyl ether, at plant	Materials	Chemicals	2.11E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
ethylene glycol, at plant	Materials	Chemicals	1.57E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ethylene oxide, at plant	Materials	Chemicals	1.82E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
ethylenediamine, at plant	Materials	Chemicals	5.62E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
explosives, tovex, at plant	Materials	Chemicals	2.51E+00	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
fatty acids, from vegetarian oil, at plant	Materials	Chemicals	2.06E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fatty alcohol, from coconut oil, at plant	Materials	Chemicals	1.42E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fatty alcohol, from palm kernel oil, at plant	Materials	Chemicals	4.24E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fatty alcohol, from palm oil, at plant	Materials	Chemicals	2.48E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fatty alcohol, petrochemical, at plant	Materials	Chemicals	2.56E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fluorine, liquid, at plant	Materials	Chemicals	1.13E+01	kg	1999	Ecoinvent data V2.2 (2010)	Europe
fluorspar, 97%, at plant	Materials	Chemicals	1.39E-01	kg	1991	Ecoinvent data V2.2 (2010)	Global
fluosilicic acid, 22% in H2O, at plant, Europe	Materials	Chemicals	9.38E-01	kg	1999	Ecoinvent data V2.2 (2010)	Europe
fluosilicic acid, 22% in H2O, at plant, MA	Materials	Chemicals	9.77E-01	kg	2001	Ecoinvent data V2.2 (2010)	Morocco
fluosilicic acid, 22% in H2O, at plant, USA	Materials	Chemicals	9.16E-01	kg	2001	Ecoinvent data V2.2 (2010)	United States
flux, wave soldering, at plant	Materials	Chemicals	2.04E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
formaldehyde, production mix, at plant	Materials	Chemicals	1.11E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
formic acid from butane, at plant	Materials	Chemicals	1.18E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
formic acid from methyl formate, at plant	Materials	Chemicals	3.08E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
formic acid, at plant	Materials	Chemicals	2.49E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
fraction 1, from naphtha, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
fraction 7, from naphtha, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
fraction 8, from naphtha, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
glycerine, from epichlorohydrin, at plant	Materials	Chemicals	4.93E+00	kg	2004	Ecoinvent data V2.2 (2010)	Europe
glycerine, from palm oil, at esterification plant	Materials	Chemicals	2.31E+00	kg	2006	Ecoinvent data V2.2 (2010)	Malaysia
glycerine, from rape oil, at esterification plant, CH	Materials	Chemicals	2.82E+00	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
glycerine, from rape oil, at esterification plant, Europe	Materials	Chemicals	3.56E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
glycerine, from soybean oil, at esterification plant, BR	Materials	Chemicals	2.97E+00	kg	2006	Ecoinvent data V2.2 (2010)	Brazil
glycerine, from soybean oil, at esterification plant, USA	Materials	Chemicals	8.48E-01	kg	2006	Ecoinvent data V2.2 (2010)	United States
glycerine, from vegetable oil, at esterification plant	Materials	Chemicals	4.19E-01	kg	2006	Ecoinvent data V2.2 (2010)	France
graphite, at plant	Materials	Chemicals	2.81E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
graphite, battery grade, at plant	Materials	Chemicals	2.22E+00	kg	2010	Ecoinvent data V2.2 (2010)	China
helium, at plant	Materials	Chemicals	9.32E-01	kg	2007	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
heptane, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
hexafluorethane, at plant	Materials	Chemicals	1.00E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
hexamethyldisilazane, at plant	Materials	Chemicals	3.06E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
hexane, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
hydrochloric acid from benzene chlorination, at plant	Materials	Chemicals	2.06E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
hydrochloric acid, 30% in H2O, at plant	Materials	Chemicals	8.53E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
hydrochloric acid, 36% in H2O, from reacting propylene and chlorine, at plant	Materials	Chemicals	7.95E-02	kg	2004	Ecoinvent data V2.2 (2010)	Europe
hydrochloric acid, from MannhMaterials process, at plant	Materials	Chemicals	3.94E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
hydrochloric acid, from the reaction of hydrogen with chlorine, at plant	Materials	Chemicals	1.31E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
hydrogen cyanide from Sohio process, at plant	Materials	Chemicals	3.05E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
hydrogen cyanide, at plant	Materials	Chemicals	7.29E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
hydrogen fluoride, at plant	Materials	Chemicals	2.69E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
hydrogen peroxide, 50% in H2O, at plant	Materials	Chemicals	1.12E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
hydrogen sulphide, H2S, at plant	Materials	Chemicals	3.60E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
hydrogen, cracking, APME, at plant	Materials	Chemicals	1.70E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
hydrogen, from butanediol dehdrogenation	Materials	Chemicals	2.32E+00	kg	2007	Ecoinvent data V2.2 (2010)	Global
hydrogen, liquid, at plant	Materials	Chemicals	1.67E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
hydrogen, liquid, diaphragm cell, at plant	Materials	Chemicals	9.40E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
hydrogen, liquid, from chlorine electrolysis, production mix, at plant	Materials	Chemicals	1.02E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
hydrogen, liquid, membrane cell, at plant	Materials	Chemicals	9.18E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
hydrogen, liquid, mercury cell, at plant	Materials	Chemicals	1.09E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ilmenite, 54% titanium dioxide, at plant	Materials	Chemicals	2.23E-01	kg	2005	Ecoinvent data V2.2 (2010)	Australia
intral, at plant	Materials	Chemicals	3.12E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
iron (III) chloride, 40% in H2O, at plant	Materials	Chemicals	8.03E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
isobutanol, at plant	Materials	Chemicals	2.61E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
isobutyl acetate, at plant	Materials	Chemicals	3.65E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
isohexane, at plant	Materials	Chemicals	1.19E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
isopropanol, at plant	Materials	Chemicals	1.85E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
isopropyl acetate, at plant	Materials	Chemicals	3.15E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
kaolin, at plant	Materials	Chemicals	2.10E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
krypton, gaseous, at plant	Materials	Chemicals	1.17E+02	kg	2001	Ecoinvent data V2.2 (2010)	Europe
krypton, gaseous, at regional storage	Materials	Chemicals	1.17E+02	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
lanthanum oxide, at plant	Materials	Chemicals	9.34E+00	kg	2005	Ecoinvent data V2.2 (2010)	China
latex, at plant	Materials	Chemicals	2.63E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
lime from lithium carbonate hydration	Materials	Chemicals	2.43E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
lithium carbonate, at plant	Materials	Chemicals	3.08E+00	kg	2010	Ecoinvent data V2.2 (2010)	Global
lithium chloride, at plant	Materials	Chemicals	4.58E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
lithium fluoride, at plant	Materials	Chemicals	7.92E+00	kg	2010	Ecoinvent data V2.2 (2010)	China
lithium hexafluorophosphate, at plant	Materials	Chemicals	2.50E+01	kg	2010	Ecoinvent data V2.2 (2010)	China
lithium hydroxide, at plant	Materials	Chemicals	2.43E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
lithium manganese oxide, at plant	Materials	Chemicals	5.00E+00	kg	2010	Ecoinvent data V2.2 (2010)	Global
lubricating oil, at plant	Materials	Chemicals	1.05E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
magnesium oxide, at plant	Materials	Chemicals	1.06E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
magnesium sulphate, at plant	Materials	Chemicals	2.97E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
maleic anhydride from catalytic oxidation of benzene, at plant	Materials	Chemicals	4.00E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
maleic anhydride from the direct oxidation of n-butane, at plant	Materials	Chemicals	2.37E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
maleic anhydride, at plant	Materials	Chemicals	2.78E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
malusil, at plant	Materials	Chemicals	2.81E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
manganese oxide (Mn2O3), at plant	Materials	Chemicals	2.42E+00	kg	2010	Ecoinvent data V2.2 (2010)	China
melamine, at plant	Materials	Chemicals	5.08E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
methanol, at plant	Materials	Chemicals	7.45E-01	kg	2001	Ecoinvent data V2.2 (2010)	Global
methanol, at regional storage	Materials	Chemicals	8.00E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
methyl acetate, at plant	Materials	Chemicals	1.18E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
methyl acrylate, at plant	Materials	Chemicals	3.09E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
methyl ethyl ketone from butane, at plant	Materials	Chemicals	1.18E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
methyl ethyl ketone, at plant	Materials	Chemicals	1.76E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
methyl formate, at plant	Materials	Chemicals	2.72E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
methyl tert-butyl ether, at plant	Materials	Chemicals	1.15E+00	kg	1991	Ecoinvent data V2.2 (2010)	Europe
methyl-3-methoxypropionate, at plant	Materials	Chemicals	3.08E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
methylamine, at plant	Materials	Chemicals	2.68E+00	kg	2010	Ecoinvent data V2.2 (2010)	Europe
methylchloride, at plant	Materials	Chemicals	3.04E+00	kg	1997	Ecoinvent data V2.2 (2010)	Western Europe
methylchloride, at regional storage	Materials	Chemicals	3.16E+00	kg	1991	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
methylcyclohexane, at plant	Materials	Chemicals	4.74E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
methylcyclohexane, from naphtha, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
methylcyclopentane, from naphtha, at plant	Materials	Chemicals	9.00E-01	kg	2004	Ecoinvent data V2.2 (2010)	Europe
monochlorobenzene, at plant	Materials	Chemicals	2.06E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
monochloropentafluoroethane, at plant	Materials	Chemicals	1.00E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
monoethanolamine, at plant	Materials	Chemicals	3.44E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
N,N-dimethylformamide, at plant	Materials	Chemicals	1.89E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
natural gas liquids, from natural gas, helium extraction	Materials	Chemicals	9.29E-01	kg	2007	Ecoinvent data V2.2 (2010)	Global
neodymium oxide, at plant	Materials	Chemicals	3.86E+01	kg	2005	Ecoinvent data V2.2 (2010)	China
nitric acid, 50% in H2O, at plant	Materials	Chemicals	3.17E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
nitrobenzene, at plant	Materials	Chemicals	3.31E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
nitrogen, liquid, at plant	Materials	Chemicals	4.34E-01	kg	2001	Ecoinvent data V2.2 (2010)	Europe
N-methyl-2-pyrrolidone, at plant	Materials	Chemicals	3.95E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
n-olefins, at plant	Materials	Chemicals	2.13E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
o-dichlorobenzene, at plant	Materials	Chemicals	2.06E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
optical brighteners, in paper production, at plant	Materials	Chemicals	1.66E+01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
oxygen, liquid, at plant	Materials	Chemicals	4.09E-01	kg	2001	Ecoinvent data V2.2 (2010)	Europe
ozone, liquid, at plant	Materials	Chemicals	8.02E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
palm kernel oil, at oil mill	Materials	Chemicals	2.90E+00	kg	2006	Ecoinvent data V2.2 (2010)	Malaysia
palm oil, at oil mill	Materials	Chemicals	1.68E+00	kg	2006	Ecoinvent data V2.2 (2010)	Malaysia
paraffin, at plant	Materials	Chemicals	8.29E-01	kg	1995	Ecoinvent data V2.2 (2010)	Europe
p-dichlorobenzene, at plant	Materials	Chemicals	2.06E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
penta-erythritol, at plant	Materials	Chemicals	3.08E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
pentane, at plant	Materials	Chemicals	1.11E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
phenol, at plant	Materials	Chemicals	3.87E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
phosgene, liquid, at plant	Materials	Chemicals	1.71E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
phosphane, at plant	Materials	Chemicals	1.65E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
phosphate rock, as P2O5, beneficiated, dry, at plant	Materials	Chemicals	2.26E-01	kg	2001	Ecoinvent data V2.2 (2010)	Morocco
phosphate rock, as P2O5, beneficiated, wet, at plant	Materials	Chemicals	2.13E-01	kg	2001	Ecoinvent data V2.2 (2010)	United States
phosphoric acid, fertiliser grade, 70% in H2O, at plant, Global	Materials	Chemicals	9.21E-01	kg	1999	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
phosphoric acid, fertiliser grade, 70% in H2O, at plant, MA	Materials	Chemicals	9.59E-01	kg	2001	Ecoinvent data V2.2 (2010)	Morocco
phosphoric acid, fertiliser grade, 70% in H2O, at plant, USA	Materials	Chemicals	8.99E-01	kg	2001	Ecoinvent data V2.2 (2010)	United States
phosphoric acid, industrial grade, 85% in H2O, at plant	Materials	Chemicals	1.42E+00	kg	1994	Ecoinvent data V2.2 (2010)	Europe
phosphorous chloride, at plant	Materials	Chemicals	3.36E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
phosphorous pentachloride, at plant	Materials	Chemicals	2.84E+00	kg	2010	Ecoinvent data V2.2 (2010)	China
phosphorus, white, liquid, at plant	Materials	Chemicals	1.00E+01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
phosphoryl chloride, at plant	Materials	Chemicals	3.47E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
phthalic anhydride, at plant	Materials	Chemicals	2.55E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
pigments, paper production, unspecified, at plant	Materials	Chemicals	1.01E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
pitch despergents, in paper production, at plant	Materials	Chemicals	1.05E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
polyvinylfluoride film, at plant	Materials	Chemicals	2.27E+01	kg	2006	Ecoinvent data V2.2 (2010)	United States
polyvinylfluoride, at plant	Materials	Chemicals	1.84E+01	kg	2006	Ecoinvent data V2.2 (2010)	United States
polyvinylfluoride, dispersion, at plant	Materials	Chemicals	2.15E+01	kg	2006	Ecoinvent data V2.2 (2010)	United States
portachrom, at plant	Materials	Chemicals	5.46E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
portafer, at plant	Materials	Chemicals	3.12E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
potassium carbonate from manganese dioxide oxidation, at plant	Materials	Chemicals	9.75E-01	kg	2009	Ecoinvent data V2.2 (2010)	Europe
potassium carbonate, at plant	Materials	Chemicals	2.33E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
potassium hydroxide, at regional storage	Materials	Chemicals	1.91E+00	kg	2004	Ecoinvent data V2.2 (2010)	Europe
potassium perchlorate, at plant	Materials	Chemicals	5.01E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
potassium permanganate, at plant	Materials	Chemicals	1.17E+00	kg	2009	Ecoinvent data V2.2 (2010)	Europe
potassium sulphate, as K2O, from rape oil, at esterification plant	Materials	Chemicals	3.94E-01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
praseodymium oxide, at plant	Materials	Chemicals	4.14E+01	kg	2005	Ecoinvent data V2.2 (2010)	China
propanal, at plant	Materials	Chemicals	3.31E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
propylene glycol, liquid, at plant	Materials	Chemicals	4.07E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
propylene oxide, liquid, at plant	Materials	Chemicals	4.47E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
rare earth concentrate, 70% REO, from bastnasite, at beneficiation	Materials	Chemicals	1.39E+00	kg	2005	Ecoinvent data V2.2 (2010)	China
refrigerant R134a, at plant	Materials	Chemicals	1.03E+02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
retention aids, in paper production, at plant	Materials	Chemicals	2.78E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
rosin size, in paper production, at plant	Materials	Chemicals	1.56E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
rutile, 95% titanium dioxide, at plant	Materials	Chemicals	1.16E+00	kg	2005	Ecoinvent data V2.2 (2010)	Australia
sales gas, from natural gas, helium extraction	Materials	Chemicals	9.29E-01	kg	2007	Ecoinvent data V2.2 (2010)	Global
samarium europium gadolinium concentrate, 94% rare earth oxide, at plant	Materials	Chemicals	5.56E+01	kg	2005	Ecoinvent data V2.2 (2010)	China
sConstructiondary sulphur, at refinery, CH	Materials	Chemicals	1.83E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
sConstructiondary sulphur, at refinery, Europe	Materials	Chemicals	3.15E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
selenium, at plant	Materials	Chemicals	2.65E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
silicon carbide, at plant	Materials	Chemicals	7.18E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
silicon carbide, recycling, at plant	Materials	Chemicals	7.19E-01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
silicon tetrachloride, at plant, DE	Materials	Chemicals	1.74E+00	kg	2005	Ecoinvent data V2.2 (2010)	Germany
silicon tetrahydride, at plant, Europe	Materials	Chemicals	6.15E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
silicone product, at plant	Materials	Chemicals	2.71E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
soda, powder, at plant	Materials	Chemicals	4.42E-01	kg	1999	Ecoinvent data V2.2 (2010)	Europe
sodium arsenide, at plant	Materials	Chemicals	2.61E+00	kg	2010	Ecoinvent data V2.2 (2010)	Global
sodium borates, at plant	Materials	Chemicals	8.18E-02	kg	2000	Ecoinvent data V2.2 (2010)	United States
sodium carbonate from ammonium chloride production, at plant	Materials	Chemicals	1.05E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
sodium chlorate, powder, at plant	Materials	Chemicals	3.21E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
sodium chloride, brine solution, at plant	Materials	Chemicals	1.13E-01	kg	1994	Ecoinvent data V2.2 (2010)	Europe
sodium chloride, powder, at plant	Materials	Chemicals	1.80E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium cyanide, at plant	Materials	Chemicals	5.62E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium dichromate, at plant	Materials	Chemicals	4.82E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium dithionite, anhydrous, at plant	Materials	Chemicals	3.51E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium formate, reaction of formaldehyde with acetaldehyde, at plant	Materials	Chemicals	5.43E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium hydroxide, 50% in H2O, diaphragm cell, at plant	Materials	Chemicals	1.22E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium hydroxide, 50% in H2O, membrane cell, at plant	Materials	Chemicals	1.00E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium hydroxide, 50% in H2O, mercury cell, at plant	Materials	Chemicals	1.08E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium hydroxide, 50% in H2O, production mix, at plant	Materials	Chemicals	1.10E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium hypochlorite, 15% in H2O, at plant	Materials	Chemicals	8.88E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
sodium methoxide, at plant	Materials	Chemicals	4.84E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
sodium perchlorate, at plant	Materials	Chemicals	4.54E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
sodium persulfate, at plant	Materials	Chemicals	1.27E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
sodium phosphate, at plant	Materials	Chemicals	2.88E+00	kg	1994	Ecoinvent data V2.2 (2010)	Europe
sodium silicate, furnace liquor, 37% in H2O, at plant	Materials	Chemicals	1.10E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
sodium silicate, furnace process, pieces, at plant	Materials	Chemicals	8.42E-01	kg	1995	Ecoinvent data V2.2 (2010)	Europe
sodium silicate, hydrothermal liquor, 48% in H2O, at plant	Materials	Chemicals	7.48E-01	kg	1995	Ecoinvent data V2.2 (2010)	Europe
sodium silicate, spray powder 80%, at plant	Materials	Chemicals	1.59E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
sodium sulphat from viscose production, at plant	Materials	Chemicals	3.80E-01	kg	2007	Ecoinvent data V2.2 (2010)	Global
sodium sulphate from sulfuric acid digestion of spodumene	Materials	Chemicals	7.84E-01	kg	2007	Ecoinvent data V2.2 (2010)	Global
sodium sulphate, from MannhMaterials process, at plant	Materials	Chemicals	4.73E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium sulphate, from natural sources, at plant	Materials	Chemicals	1.32E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium sulphate, powder, production mix, at plant	Materials	Chemicals	4.64E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sodium tetrafluorborate, at plant	Materials	Chemicals	4.60E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
sodium tetrahydroborate, at plant	Materials	Chemicals	4.84E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
solvents, organic, unspecified, at plant	Materials	Chemicals	2.44E+00	kg	2000	Ecoinvent data V2.2 (2010)	Global
soya oil, at plant	Materials	Chemicals	1.83E+00	kg	1998	Ecoinvent data V2.2 (2010)	Europe
soya scrap, at plant	Materials	Chemicals	1.77E+00	kg	1998	Ecoinvent data V2.2 (2010)	Europe
spodumene, at plant	Materials	Chemicals	3.12E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
steam from catalytic oxidation of benzene, at plant	Materials	Chemicals	6.85E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
steam from direct oxidation of n-butane, at plant	Materials	Chemicals	3.76E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
steam from the production of formaldehyde	Materials	Chemicals	3.07E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
stibnite ore, 70% stibnite, at mine	Materials	Chemicals	6.26E+00	kg	2003	Ecoinvent data V2.2 (2010)	China
sulphite, at plant	Materials	Chemicals	1.39E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sulphur dioxide, liquid, at plant	Materials	Chemicals	4.18E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sulphur hexafluoride, liquid, at plant	Materials	Chemicals	1.23E+02	kg	1998	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
sulphur trioxide, at plant	Materials	Chemicals	4.11E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sulphuric acid from viscose production, at plant	Materials	Chemicals	2.09E-01	kg	2007	Ecoinvent data V2.2 (2010)	Global
sulphuric acid, liquid, at plant	Materials	Chemicals	1.24E-01	kg	2001	Ecoinvent data V2.2 (2010)	Europe
tetrachloroethylene, at plant	Materials	Chemicals	3.84E+00	kg	1997	Ecoinvent data V2.2 (2010)	Western Europe
tetrachloroethylene, at regional storage	Materials	Chemicals	3.96E+00	kg	1991	Ecoinvent data V2.2 (2010)	Switzerland
tetrachlorosilane, at plant	Materials	Chemicals	6.22E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
tetrafluoroethylene film, on glass	Materials	Chemicals	3.40E+02	kg	2002	Ecoinvent data V2.2 (2010)	Europe
tetrafluoroethylene, at plant	Materials	Chemicals	3.23E+02	kg	1999	Ecoinvent data V2.2 (2010)	Europe
tetrahydrofuran, at plant	Materials	Chemicals	5.73E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
titanium dioxide at plant, sulphate process, at plant	Materials	Chemicals	5.00E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
titanium dioxide, chloride process, at plant	Materials	Chemicals	4.13E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
titanium dioxide, production mix, at plant	Materials	Chemicals	4.57E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
toluene, liquid, at plant	Materials	Chemicals	1.50E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
trichloroborane, at plant	Materials	Chemicals	3.19E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
trichloroethylene, at plant	Materials	Chemicals	4.63E-01	kg	1997	Ecoinvent data V2.2 (2010)	Western Europe
trichloromethane, at plant	Materials	Chemicals	3.42E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
trichloropropane, from hypochlorination of allyl chloride, at plant	Materials	Chemicals	3.19E+00	kg	2004	Ecoinvent data V2.2 (2010)	Europe
triethanolamine, at plant	Materials	Chemicals	3.75E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
triethylene glycol, at plant	Materials	Chemicals	3.05E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
triethylene glycol, recycling, at plant	Materials	Chemicals	7.19E-01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
trifluoromethane, at plant	Materials	Chemicals	8.99E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
trimethyl borate, at plant	Materials	Chemicals	1.97E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
trimethylamine, at plant	Materials	Chemicals	2.47E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
urea ammonium nitrate, as N, at regional storehouse	Materials	Chemicals	5.84E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
urea, as N, at regional storehouse	Materials	Chemicals	3.31E+00	kg	1999	Ecoinvent data V2.2 (2010)	Europe
vinyl fluoride, at plant	Materials	Chemicals	1.06E+01	kg	2006	Ecoinvent data V2.2 (2010)	United States
xenon, gaseous, at plant	Materials	Chemicals	7.51E+02	kg	2001	Ecoinvent data V2.2 (2010)	Europe
xenon, gaseous, at regional storage	Materials	Chemicals	7.51E+02	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
xylene, at plant	Materials	Chemicals	1.64E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
zinc monosulphate, ZnSO4.H2O, at plant	Materials	Chemicals	1.81E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
zinc oxide, at plant	Materials	Chemicals	2.89E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
zinc sulphide, ZnS, at plant	Materials	Chemicals	4.08E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
zircon, 50% zirconium, at plant	Materials	Chemicals	1.12E+00	kg	2005	Ecoinvent data V2.2 (2010)	Australia
zirconium oxide, at plant	Materials	Chemicals	3.98E+00	kg	2005	Ecoinvent data V2.2 (2010)	Australia
benzene, at coke plant, DE	Materials	Coal/gas	7.51E-01	kg	1992	Ecoinvent data V2.2 (2010)	Germany
benzene, at coke plant, Global	Materials	Coal/gas	9.84E-01	kg	1998	Ecoinvent data V2.2 (2010)	Global
hard coal mix, at regional storage	Materials	Coal/gas	3.02E-01	kg	1999	Ecoinvent data V2.2 (2010)	UCTE
hard coal supply mix, AT	Materials	Coal/gas	3.16E-01	kg	1999	Ecoinvent data V2.2 (2010)	Austria
hard coal supply mix, at regional storage	Materials	Coal/gas	1.70E-01	kg	1999	Ecoinvent data V2.2 (2010)	United States
hard coal supply mix, BE	Materials	Coal/gas	3.06E-01	kg	1999	Ecoinvent data V2.2 (2010)	Belgium
hard coal supply mix, CN	Materials	Coal/gas	9.75E-01	kg	2002	Ecoinvent data V2.2 (2010)	China
hard coal supply mix, CZ	Materials	Coal/gas	2.78E-01	kg	1999	Ecoinvent data V2.2 (2010)	Switzerland
hard coal supply mix, DE	Materials	Coal/gas	3.60E-01	kg	1999	Ecoinvent data V2.2 (2010)	Germany
hard coal supply mix, ES	Materials	Coal/gas	3.18E-01	kg	1999	Ecoinvent data V2.2 (2010)	Spain
hard coal supply mix, FR	Materials	Coal/gas	2.77E-01	kg	1999	Ecoinvent data V2.2 (2010)	France
hard coal supply mix, HR	Materials	Coal/gas	3.16E-01	kg	1999	Ecoinvent data V2.2 (2010)	Croatia
hard coal supply mix, IT	Materials	Coal/gas	2.65E-01	kg	1999	Ecoinvent data V2.2 (2010)	Italy
hard coal supply mix, NL	Materials	Coal/gas	2.66E-01	kg	1999	Ecoinvent data V2.2 (2010)	Netherlands
hard coal supply mix, PO	Materials	Coal/gas	2.81E-01	kg	1999	Ecoinvent data V2.2 (2010)	Poland
hard coal supply mix, PT	Materials	Coal/gas	2.01E-01	kg	1999	Ecoinvent data V2.2 (2010)	Portugal
hard coal supply mix, SK	Materials	Coal/gas	3.24E-01	kg	1999	Ecoinvent data V2.2 (2010)	Slovakia
hard coal, at mine, AU	Materials	Coal/gas	9.64E-02	kg	2002	Ecoinvent data V2.2 (2010)	Australia
hard coal, at mine, Central and Eastern Europe	Materials	Coal/gas	2.50E-01	kg	2002	Ecoinvent data V2.2 (2010)	Central and Eastern Europe
hard coal, at mine, Centrally Planned Asia and CN	Materials	Coal/gas	1.03E-01	kg	2002	Ecoinvent data V2.2 (2010)	Centrally Planned Asia and China
hard coal, at mine, CN	Materials	Coal/gas	9.01E-01	kg	2002	Ecoinvent data V2.2 (2010)	China
hard coal, at mine, Latin American and the Caribbean	Materials	Coal/gas	3.04E-02	kg	2002	Ecoinvent data V2.2 (2010)	Latin American and the Caribbean
hard coal, at mine, North America	Materials	Coal/gas	1.05E-01	kg	2002	Ecoinvent data V2.2 (2010)	North America

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
hard coal, at mine, RU	Materials	Coal/gas	2.99E-01	kg	2002	Ecoinvent data V2.2 (2010)	Russian Federation
hard coal, at mine, SA	Materials	Coal/gas	1.15E-01	kg	2002	Ecoinvent data V2.2 (2010)	South Africa
hard coal, at mine, Western Europe	Materials	Coal/gas	3.79E-01	kg	2002	Ecoinvent data V2.2 (2010)	Western Europe
hard coal, at regional storage	Materials	Coal/gas	3.88E-01	kg	1989	Ecoinvent data V2.2 (2010)	Western Europe
hard coal, at regional storage, AU	Materials	Coal/gas	1.08E-01	kg	1989	Ecoinvent data V2.2 (2010)	Australia
hard coal, at regional storage, Central and Eastern Europe	Materials	Coal/gas	2.71E-01	kg	1989	Ecoinvent data V2.2 (2010)	Central and Eastern Europe
hard coal, at regional storage, Centrally Planned Asia and CN	Materials	Coal/gas	1.14E-01	kg	1989	Ecoinvent data V2.2 (2010)	Centrally Planned Asia and China
hard coal, at regional storage, Latin American and the Caribbean	Materials	Coal/gas	4.19E-02	kg	1989	Ecoinvent data V2.2 (2010)	Latin American and the Caribbean
hard coal, at regional storage, North America	Materials	Coal/gas	1.41E-01	kg	1989	Ecoinvent data V2.2 (2010)	North America
hard coal, at regional storage, RU	Materials	Coal/gas	3.22E-01	kg	1989	Ecoinvent data V2.2 (2010)	Russian Federation
hard coal, at regional storage, SA	Materials	Coal/gas	1.42E-01	kg	1989	Ecoinvent data V2.2 (2010)	South Africa
lignite, at mine	Materials	Coal/gas	1.82E-02	kg	1994	Ecoinvent data V2.2 (2010)	Europe
liquefied petroleum gas, at service station	Materials	Coal/gas	7.05E-01	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, from high pressure network (1-5 bar), at service station	Materials	Coal/gas	5.87E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, from low pressure network (<0.1 bar), at service station	Materials	Coal/gas	8.30E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, from medium pressure network (0.1-1 bar), at service station	Materials	Coal/gas	6.07E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
natural gas, production mix, at service station	Materials	Coal/gas	5.93E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
NOx retained, in SCR	Materials	Coal/gas	7.50E-01	kg	2000	Ecoinvent data V2.2 (2010)	Global
peat, at mine	Materials	Coal/gas	1.82E-02	kg	1994	Ecoinvent data V2.2 (2010)	Nordic Countries Power

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
SOx retained, in hard coal flue gas desulphurisation	Materials	Coal/gas	8.37E-01	kg	2000	Ecoinvent data V2.2 (2010)	Association Europe
SOx retained, in lignite flue gas desulphurisation	Materials	Coal/gas	7.34E-01	kg	2000	Ecoinvent data V2.2 (2010)	Global
tar, at coke plant, DE	Materials	Coal/gas	6.98E-01	kg	1992	Ecoinvent data V2.2 (2010)	Germany
tar, at coke plant, Global	Materials	Coal/gas	9.15E-01	kg	1998	Ecoinvent data V2.2 (2010)	Global
acrylic filler, at plant	Materials	Construction	4.15E-01	kg	2003	Ecoinvent data V2.2 (2010)	Europe
adhesive mortar, at plant	Materials	Construction	1.10E+00	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
anhydrite floor, at plant	Materials	Construction	4.26E-02	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
anhydrite rock, at mine	Materials	Construction	2.05E-03	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
anhydrite, at plant	Materials	Construction	1.45E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
anhydrite, burned, at plant	Materials	Construction	9.26E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
asbestos, crysotile type, at plant	Materials	Construction	2.81E-02	kg	2000	Ecoinvent data V2.2 (2010)	Global
autoclaved aerated concrete block, at plant	Materials	Construction	4.12E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
basalt, at mine	Materials	Construction	7.48E-03	kg	2003	Ecoinvent data V2.2 (2010)	Europe
base plaster, at plant	Materials	Construction	2.13E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
bentonite, at mine	Materials	Construction	2.66E-02	kg	2000	Ecoinvent data V2.2 (2010)	Germany
bentonite, at processing	Materials	Construction	4.96E-01	kg	2000	Ecoinvent data V2.2 (2010)	Germany
blast furnace slag cement, at plant	Materials	Construction	4.45E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
blasting	Materials	Construction	2.63E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
brick, at plant	Materials	Construction	2.39E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
calcareous marl, at plant	Materials	Construction	2.35E-03	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
cement cast plaster floor, at plant	Materials	Construction	1.70E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
cement mortar, at plant	Materials	Construction	1.91E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
cement, unspecified, at plant	Materials	Construction	7.61E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
ceramic tiles, at regional storage	Materials	Construction	7.82E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
clay plaster, at plant	Materials	Construction	1.91E-02	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
clay, at mine	Materials	Construction	2.94E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
clinker, at plant	Materials	Construction	9.02E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
cobwork, at plant	Materials	Construction	4.06E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
concrete block, at plant	Materials	Construction	1.21E-01	kg	2001	Ecoinvent data V2.2 (2010)	Germany
concrete roof tile, at plant	Materials	Construction	2.09E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
cover coat, mineral, at plant	Materials	Construction	8.05E-02	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
cover coat, organic, at plant	Materials	Construction	1.91E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
crushing, rock	Materials	Construction	1.20E-05	kg	2001	Ecoinvent data V2.2 (2010)	Europe
dolomite, at plant	Materials	Construction	2.81E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
electronics for control units	Materials	Construction	2.59E+01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
expanded clay, at plant	Materials	Construction	3.28E-01	kg	2000	Ecoinvent data V2.2 (2010)	Germany
expanded vermiculite, at plant	Materials	Construction	4.20E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
facilities, chemical production	Materials	Construction	6.89E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
feldspar, at plant	Materials	Construction	3.40E-02	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fibre cement corrugated slab, at plant	Materials	Construction	6.83E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
fibre cement facing tile, at plant	Materials	Construction	1.09E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
fibre cement facing tile, large format, at plant	Materials	Construction	1.12E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
fibre cement facing tile, small format, at plant	Materials	Construction	1.03E+00	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
fibre cement roof slate, at plant	Materials	Construction	7.31E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
gravel, crushed, at mine	Materials	Construction	4.40E-03	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
gravel, round, at mine	Materials	Construction	2.41E-03	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
gravel, unspecified, at mine	Materials	Construction	2.82E-03	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
gypsum fibre board, at plant	Materials	Construction	2.93E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
gypsum plaster board, at plant	Materials	Construction	3.54E-01	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
gypsum, mineral, at mine	Materials	Construction	2.05E-03	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
industrial machine, heavy, unspecified, at plant	Materials	Construction	1.96E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
light clay brick, at plant	Materials	Construction	1.61E-01	kg	1995	Ecoinvent data V2.2 (2010)	Germany
light mortar, at plant	Materials	Construction	4.62E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
lightweight concrete block, expanded clay, at plant	Materials	Construction	4.00E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
lightweight concrete block, expanded perlite, at plant	Materials	Construction	1.00E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
lightweight concrete block, expanded vermiculite, at plant	Materials	Construction	4.84E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
lightweight concrete block, polystyrene, at plant	Materials	Construction	1.13E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
lightweight concrete block, pumice, at plant	Materials	Construction	2.15E-01	kg	2000	Ecoinvent data V2.2 (2010)	Germany
lime mortar, at plant	Materials	Construction	6.02E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
lime, hydrated, loose, at plant	Materials	Construction	7.58E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
lime, hydrated, packed, at plant	Materials	Construction	7.64E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
lime, hydraulic, at plant	Materials	Construction	8.33E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
limestone, at mine	Materials	Construction	1.93E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
limestone, crushed, for mill	Materials	Construction	2.14E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
limestone, crushed, washed	Materials	Construction	2.15E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
limestone, milled, loose, at plant	Materials	Construction	1.32E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
limestone, milled, packed, at plant	Materials	Construction	1.93E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
mastic asphalt, at plant	Materials	Construction	2.10E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
natural stone plate, cut, at regional storage	Materials	Construction	2.30E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
natural stone plate, grounded, at regional storage	Materials	Construction	3.13E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
natural stone plate, polished, at regional storage	Materials	Construction	3.80E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
packing, cement	Materials	Construction	2.88E-03	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
packing, clay products	Materials	Construction	5.62E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packing, fibre cement products	Materials	Construction	1.13E-02	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
packing, lime products	Materials	Construction	5.97E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
perlite, at mine	Materials	Construction	1.70E-03	kg	2000	Ecoinvent data V2.2 (2010)	Germany
plaster mixing	Materials	Construction	1.09E-02	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
portland calcareous cement, at plant	Materials	Construction	7.19E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
portland cement, strength class Z 42.5, at plant	Materials	Construction	8.22E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
portland cement, strength class Z 52.5, at plant	Materials	Construction	8.33E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
portland slag sand cement, at plant	Materials	Construction	7.05E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
pumice, at mine	Materials	Construction	7.46E-04	kg	2000	Ecoinvent data V2.2 (2010)	Germany
quarry tile, at plant	Materials	Construction	2.27E-01	kg	2004	Ecoinvent data V2.2 (2010)	Switzerland
quicklime, in pieces, loose, at plant	Materials	Construction	9.84E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
quicklime, milled, loose, at plant	Materials	Construction	9.86E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
quicklime, milled, packed, at plant	Materials	Construction	9.92E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
refractory, basic, packed, at plant	Materials	Construction	2.32E+00	kg	2001	Ecoinvent data V2.2 (2010)	Germany
refractory, fireclay, packed, at plant	Materials	Construction	1.19E+00	kg	2001	Ecoinvent data V2.2 (2010)	Germany
refractory, high aluminium oxide, packed, at plant	Materials	Construction	8.92E-01	kg	2001	Ecoinvent data V2.2 (2010)	Germany
roof tile, at plant	Materials	Construction	3.58E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
sand, at mine	Materials	Construction	2.41E-03	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
sand-lime brick, at plant	Materials	Construction	1.30E-01	kg	2001	Ecoinvent data V2.2 (2010)	Germany
sanitary ceramics, at regional storage	Materials	Construction	2.34E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
silica sand, at plant	Materials	Construction	2.10E-02	kg	2001	Ecoinvent data V2.2 (2010)	Germany
stucco, at plant	Materials	Construction	7.38E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
thermal plaster, at plant	Materials	Construction	7.70E-01	kg	2001	Ecoinvent data V2.2 (2010)	Switzerland
vermiculite, at mine	Materials	Construction	1.68E-03	kg	2000	Ecoinvent data V2.2 (2010)	South Africa
Anode, lithium-ion battery, graphite, at plant	Materials	Electronics	2.54E+00	kg	2010	Ecoinvent data V2.2 (2010)	China
assembly, LCD module	Materials	Electronics	3.59E+01	kg	2001	Ecoinvent data V2.2 (2010)	Global
assembly, LCD scr	Materials	Electronics	1.04E+01	kg	2001	Ecoinvent data V2.2 (2010)	Global
backlight, LCD scr , at plant	Materials	Electronics	1.07E+01	kg	2001	Ecoinvent data V2.2 (2010)	Global
battery, LiIo, rechargeable, prismatic, at plant	Materials	Electronics	5.83E+00	kg	2010	Ecoinvent data V2.2 (2010)	Global
battery, NiMH, rechargeable, prismatic, at plant	Materials	Electronics	1.83E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
cable, ribbon cable, 20-pin, with plugs, at plant	Materials	Electronics	8.97E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
capacitor, electrolyte type, < 2cm height, at plant	Materials	Electronics	4.89E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
capacitor, electrolyte type, > 2cm height, at plant	Materials	Electronics	4.65E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
capacitor, film, through-hole mounting, at plant	Materials	Electronics	4.70E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
capacitor, SMD type, surface-mounting, at plant	Materials	Electronics	5.76E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
capacitor, Tantalum-, through-hole mounting, at plant	Materials	Electronics	1.89E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
capacitor, unspecified, at plant	Materials	Electronics	7.79E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
Cathode, lithium-ion battery, lithium manganese oxide, at plant	Materials	Electronics	8.16E+00	kg	2010	Ecoinvent data V2.2 (2010)	China
cathode-ray tube, CRT scr , at plant	Materials	Electronics	5.87E+00	kg	2001	Ecoinvent data V2.2 (2010)	Global
chassis, network main devices	Materials	Electronics	4.28E+00	kg	2009	Ecoinvent data V2.2 (2010)	Europe
connector, clamp connection, at plant	Materials	Electronics	8.68E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
connector, computer, peripherical type, at plant	Materials	Electronics	6.82E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
connector, PCI bus, at plant	Materials	Electronics	3.89E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
diode, glass-, SMD type, surface mounting, at plant	Materials	Electronics	2.30E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
diode, glass-, through-hole mounting, at plant	Materials	Electronics	2.30E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
diode, unspecified, at plant	Materials	Electronics	2.30E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
electrode, negative, LiC6, at plant	Materials	Electronics	3.62E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
electrode, negative, Ni, at plant	Materials	Electronics	1.15E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
electrode, positive, LaNi5, at plant	Materials	Electronics	2.68E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
electrode, positive, LiMn2O4, at plant	Materials	Electronics	1.04E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
electrolyte, KOH, LiOH additive, at plant	Materials	Electronics	1.44E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
electron gun, for CRT tube production, at plant	Materials	Electronics	5.80E+00	kg	2007	Ecoinvent data V2.2 (2010)	Global
electronic component, active, unspecified, at plant	Materials	Electronics	7.31E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
electronic component, passive, unspecified, at plant	Materials	Electronics	4.92E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
electronic component, unspecified, at plant	Materials	Electronics	2.74E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
fan, at plant	Materials	Electronics	1.17E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
ferrite, at plant	Materials	Electronics	1.51E+00	kg	2006	Ecoinvent data V2.2 (2010)	Global
frit, for CRT tube production, at plant	Materials	Electronics	1.36E+00	kg	2007	Ecoinvent data V2.2 (2010)	Global
funnel glass, CRT scr , at plant	Materials	Electronics	1.07E+00	kg	2004	Ecoinvent data V2.2 (2010)	Global
inductor, low value multilayer chip type, LMCI, at plant	Materials	Electronics	8.21E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
inductor, miniature RF chip type, MRFI, at plant	Materials	Electronics	5.27E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
inductor, ring core choke type, at plant	Materials	Electronics	4.21E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
inductor, unspecified, at plant	Materials	Electronics	5.89E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
integrated circuit, IC, logic type, at plant	Materials	Electronics	1.01E+03	kg	2006	Ecoinvent data V2.2 (2010)	Global
integrated circuit, IC, memory type, at plant	Materials	Electronics	5.05E+02	kg	2006	Ecoinvent data V2.2 (2010)	Global
ITO powder, for target production, at plant	Materials	Electronics	2.14E+01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
ITO, sintered target, at plant	Materials	Electronics	3.35E+01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
LCD glass, at plant	Materials	Electronics	4.36E+00	kg	2001	Ecoinvent data V2.2 (2010)	Global
LCD module, at plant	Materials	Electronics	5.92E+01	kg	2001	Ecoinvent data V2.2 (2010)	Global
light emitting diode, LED, at plant	Materials	Electronics	2.30E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
magnetite, at plant	Materials	Electronics	7.90E-01	kg	1996	Ecoinvent data V2.2 (2010)	Global
mischmetal, primary, at plant	Materials	Electronics	1.70E+01	kg	2002	Ecoinvent data V2.2 (2010)	Global
panel components, at plant	Materials	Electronics	1.69E+02	kg	2001	Ecoinvent data V2.2 (2010)	Global
panel glass, CRT scr , at plant	Materials	Electronics	1.23E+00	kg	2004	Ecoinvent data V2.2 (2010)	Global
potentiometer, unspecified, at plant	Materials	Electronics	3.46E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
printed wiring board, mixed mounted, unspec., solder mix, at plant	Materials	Electronics	1.54E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, mounted, Desktop PC mainboard, at plant	Materials	Electronics	1.60E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
printed wiring board, mounted, Desktop PC mainboard, Pb containing, at plant	Materials	Electronics	1.60E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, mounted, Desktop PC mainboard, Pb free, at plant	Materials	Electronics	1.60E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, mounted, Laptop PC mainboard, at plant	Materials	Electronics	2.66E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, mounted, Laptop PC mainboard, Pb containing, at plant	Materials	Electronics	2.66E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, mounted, Laptop PC mainboard, Pb free, at plant	Materials	Electronics	2.66E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, power supply unit desktop PC, Pb containing, at plant	Materials	Electronics	4.17E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, power supply unit desktop PC, Pb free, at plant	Materials	Electronics	4.00E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, power supply unit desktop PC, solder mix, at plant	Materials	Electronics	4.05E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, surface mounted, unspec., Pb containing, at plant	Materials	Electronics	2.50E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, surface mounted, unspec., Pb free, at plant	Materials	Electronics	2.51E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, surface mounted, unspec., solder mix, at plant	Materials	Electronics	2.50E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, through-hole mounted, unspec., Pb containing, at plant	Materials	Electronics	5.86E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, through-hole mounted, unspec., Pb free, at plant	Materials	Electronics	5.66E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
printed wiring board, through-hole mounted, unspec., solder mix, at plant	Materials	Electronics	5.72E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
production efforts, capacitors	Materials	Electronics	3.61E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
production efforts, diodes	Materials	Electronics	2.27E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
production efforts, inductor	Materials	Electronics	3.39E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
production efforts, resistors	Materials	Electronics	2.70E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
production efforts, transistors	Materials	Electronics	1.22E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
resistor, metal film type, through-hole mounting, at plant	Materials	Electronics	3.08E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
resistor, SMD type, surface mounting, at plant	Materials	Electronics	1.29E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
resistor, unspecified, at plant	Materials	Electronics	5.58E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
resistor, wirewound, through-hole mounting, at plant	Materials	Electronics	2.85E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
separator, lithium-ion battery, at plant	Materials	Electronics	5.83E+00	kg	2010	Ecoinvent data V2.2 (2010)	China
single cell, lithium-ion battery, lithium manganese oxide/graphite, at plant	Materials	Electronics	5.32E+00	kg	2010	Ecoinvent data V2.2 (2010)	China
switch, toggle type, at plant	Materials	Electronics	1.39E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
toner, black, powder, at plant	Materials	Electronics	5.51E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
toner, black, used for printing	Materials	Electronics	4.44E+01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
toner, colour, powder, at plant	Materials	Electronics	5.77E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
toner, colour, used for printing	Materials	Electronics	4.17E+01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
transformer, high voltage use, at plant	Materials	Electronics	5.44E+00	kg	2007	Ecoinvent data V2.2 (2010)	Global
transformer, low voltage use, at plant	Materials	Electronics	3.27E+00	kg	2007	Ecoinvent data V2.2 (2010)	Global
transistor, SMD type, surface mounting, at plant	Materials	Electronics	1.45E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
transistor, unspecified, at plant	Materials	Electronics	1.45E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
transistor, wired, big size, through-hole mounting, at plant	Materials	Electronics	1.45E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
transistor, wired, small size, through-hole mounting, at plant	Materials	Electronics	1.44E+02	kg	2007	Ecoinvent data V2.2 (2010)	Global
use, printer, laser jet, b/w, per kg printed paper, CH	Materials	Electronics	1.89E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
use, printer, laser jet, b/w, per kg printed paper, Europe	Materials	Electronics	2.24E-01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
use, printer, laser jet, colour, per kg printed paper, CH	Materials	Electronics	2.06E-01	kg	2006	Ecoinvent data V2.2 (2010)	Switzerland
use, printer, laser jet, colour, per kg printed paper, Europe	Materials	Electronics	3.17E-01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
flat glass, coated, at plant	Materials	Glass	1.09E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
flat glass, uncoated, at plant	Materials	Glass	9.80E-01	kg	2001	Ecoinvent data V2.2 (2010)	Europe
glass cullets, sorted, at sorting plant	Materials	Glass	4.54E-02	kg	1998	Ecoinvent data V2.2 (2010)	Europe
glass fibre, at plant	Materials	Glass	2.64E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
glass tube, borosilicate, at plant	Materials	Glass	2.46E+00	kg	2001	Ecoinvent data V2.2 (2010)	Germany
glass, from public collection, unsorted	Materials	Glass	2.83E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
packaging glass, brown, at plant, CH	Materials	Glass	6.92E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, brown, at plant, DE	Materials	Glass	5.99E-01	kg	1996	Ecoinvent data V2.2 (2010)	Germany
packaging glass, brown, at plant, Europe	Materials	Glass	8.95E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
packaging glass, brown, at regional storage	Materials	Glass	7.77E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, gr , at plant, CH	Materials	Glass	5.44E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, gr , at plant, DE	Materials	Glass	5.43E-01	kg	1996	Ecoinvent data V2.2 (2010)	Germany
packaging glass, gr , at plant, Europe	Materials	Glass	8.74E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
packaging glass, gr , at regional storage	Materials	Glass	6.70E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, white, at plant, CH	Materials	Glass	5.75E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, white, at plant, DE	Materials	Glass	6.18E-01	kg	1996	Ecoinvent data V2.2 (2010)	Germany
packaging glass, white, at plant, Europe	Materials	Glass	8.89E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
packaging glass, white, at regional storage	Materials	Glass	7.02E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
solar collector glass tube, with silver mirror, at plant	Materials	Glass	6.55E+00	kg	2002	Ecoinvent data V2.2 (2010)	Germany
solar glass, low-iron, at regional storage	Materials	Glass	1.09E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
tempering, flat glass	Materials	Glass	2.35E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
cellulose fibre, inclusive blowing in, at plant	Materials	Insulators	3.68E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
cork slab, at plant	Materials	Insulators	1.16E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
expanded perlite, at plant	Materials	Insulators	9.98E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
foam glass, at plant	Materials	Insulators	1.57E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
foam glass, at regional storage, AT	Materials	Insulators	1.20E+00	kg	2005	Ecoinvent data V2.2 (2010)	Austria
foam glass, at regional storage, CH	Materials	Insulators	1.16E+00	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
glass wool mat, at plant	Materials	Insulators	1.50E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
polystyrene foam slab, 100% recycled, at plant	Materials	Insulators	6.47E-01	kg	2009	Ecoinvent data V2.2 (2010)	Switzerland
polystyrene foam slab, 45% recycled, at plant	Materials	Insulators	2.59E+00	kg	2009	Ecoinvent data V2.2 (2010)	Switzerland
polystyrene foam slab, at plant	Materials	Insulators	4.21E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
polystyrene, extruded (XPS) CO2 blown, at plant	Materials	Insulators	3.82E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
polystyrene, extruded (XPS), at plant	Materials	Insulators	1.11E+01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
polystyrene, extruded (XPS), HFC-134a blown, at plant	Materials	Insulators	3.10E+01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
polystyrene, extruded (XPS), HFC-152a blown, at plant	Materials	Insulators	5.85E+00	kg	2006	Ecoinvent data V2.2 (2010)	Europe
rock wool, at plant	Materials	Insulators	1.08E+00	kg	2007	Ecoinvent data V2.2 (2010)	Switzerland
rock wool, packed, at plant	Materials	Insulators	1.13E+00	kg	2007	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
tube insulation, elastomere, at plant	Materials	Insulators	4.49E+00	kg	1999	Ecoinvent data V2.2 (2010)	Germany
urea formaldehyde foam slab, hard, at plant	Materials	Insulators	2.91E+00	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
urea formaldehyde foam, in situ foaming, at plant	Materials	Insulators	3.05E+00	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
aluminium alloy, AlMg3, at plant	Materials	Metals	5.87E+00	kg	1998	Ecoinvent data V2.2 (2010)	Europe
aluminium fluoride, at plant	Materials	Metals	1.18E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
aluminium product manufacturing, average metal working	Materials	Metals	3.32E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
aluminium scrap, new, at plant	Materials	Metals	2.13E-02	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium scrap, old, at plant	Materials	Metals	2.53E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium, primary, at plant	Materials	Metals	1.20E+01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium, primary, liquid, at plant	Materials	Metals	1.19E+01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium, production mix, at plant	Materials	Metals	8.42E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium, production mix, cast alloy, at plant	Materials	Metals	3.06E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium, production mix, wrought alloy, at plant	Materials	Metals	1.09E+01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium, sConstructiondary, from new scrap, at plant	Materials	Metals	4.20E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
aluminium, sConstructiondary, from old scrap, at plant	Materials	Metals	1.38E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
anode slime, silver and tellurium containing, primary copper production	Materials	Metals	3.83E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global
anode, aluminium electrolysis	Materials	Metals	1.00E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
antimony, at refinery	Materials	Metals	1.29E+01	kg	2003	Ecoinvent data V2.2 (2010)	China
bauxite, at mine	Materials	Metals	7.96E-03	kg	2002	Ecoinvent data V2.2 (2010)	Global
brass, at plant	Materials	Metals	2.46E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
brazing solder, cadmium free, at plant	Materials	Metals	2.60E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
bronze, at plant	Materials	Metals	2.78E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
cadmium chloride, semiconductor-grade, at plant	Materials	Metals	2.96E+00	kg	2005	Ecoinvent data V2.2 (2010)	United States
cadmium sulphide, semiconductor-grade, at plant	Materials	Metals	4.12E+00	kg	1999	Ecoinvent data V2.2 (2010)	United States
cadmium telluride, semiconductor-grade, at plant	Materials	Metals	1.58E+01	kg	2005	Ecoinvent data V2.2 (2010)	United States
cadmium, primary, at plant	Materials	Metals	8.01E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
cadmium, semiconductor-grade, at plant	Materials	Metals	3.86E+00	kg	2004	Ecoinvent data V2.2 (2010)	United States
cast iron, at plant	Materials	Metals	1.52E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
casting, brass	Materials	Metals	6.32E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
casting, bronze	Materials	Metals	6.43E-02	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
cathode, aluminium electrolysis	Materials	Metals	2.48E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
cathode, copper, primary copper production	Materials	Metals	3.15E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global
chromite, ore concentrate, at beneficiation	Materials	Metals	2.63E-02	kg	2003	Ecoinvent data V2.2 (2010)	Global
chromium steel 18/8, at plant	Materials	Metals	4.53E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
chromium steel product manufacturing, average metal working	Materials	Metals	2.43E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
chromium, at regional storage	Materials	Metals	2.66E+01	kg	2003	Ecoinvent data V2.2 (2010)	Europe
coating powder, at plant	Materials	Metals	7.41E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
cobalt, at plant	Materials	Metals	8.32E+00	kg	2000	Ecoinvent data V2.2 (2010)	Global
cold impact extrusion, aluminium, 1 stroke	Materials	Metals	9.19E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
cold impact extrusion, aluminium, 2 strokes	Materials	Metals	1.27E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
cold impact extrusion, aluminium, 3 strokes	Materials	Metals	1.61E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
cold impact extrusion, aluminium, 4 strokes	Materials	Metals	1.96E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
cold impact extrusion, aluminium, 5 strokes	Materials	Metals	2.31E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
cold impact extrusion, steel, 1 stroke	Materials	Metals	8.81E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
cold impact extrusion, steel, 2 strokes	Materials	Metals	9.83E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
cold impact extrusion, steel, 3 strokes	Materials	Metals	1.09E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
cold impact extrusion, steel, 4 strokes	Materials	Metals	1.19E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
cold impact extrusion, steel, 5 strokes	Materials	Metals	1.29E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
contour, brass	Materials	Metals	4.09E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
contour, bronze	Materials	Metals	4.21E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
copper concentrate, at beneficiation, Asia and the Pacific	Materials	Metals	8.67E-01	kg	2003	Ecoinvent data V2.2 (2010)	Asia and the Pacific
copper concentrate, at beneficiation, Europe	Materials	Metals	1.93E-01	kg	2003	Ecoinvent data V2.2 (2010)	Europe
copper concentrate, at beneficiation, Global	Materials	Metals	4.93E-01	kg	2003	Ecoinvent data V2.2 (2010)	Global
copper concentrate, at beneficiation, ID	Materials	Metals	4.05E-01	kg	2003	Ecoinvent data V2.2 (2010)	Indonesia
copper concentrate, at beneficiation, Latin American and the Caribbean	Materials	Metals	4.55E-01	kg	2003	Ecoinvent data V2.2 (2010)	Latin American and the Caribbean

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
copper concentrate, at beneficiation, North America	Materials	Metals	8.59E-01	kg	2003	Ecoinvent data V2.2 (2010)	North America
copper concentrate, couple production Mo	Materials	Metals	4.50E-01	kg	2003	Ecoinvent data V2.2 (2010)	Global
copper product manufacturing, average metal working	Materials	Metals	1.84E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
copper telluride cement, from copper production	Materials	Metals	5.70E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global
copper, at regional storage	Materials	Metals	1.89E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
copper, blister-copper, at primary smelter	Materials	Metals	1.60E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
copper, from combined metal production, at beneficiation	Materials	Metals	9.87E-01	kg	2006	Ecoinvent data V2.2 (2010)	Sweden
copper, from combined metal production, at refinery	Materials	Metals	1.93E+00	kg	2006	Ecoinvent data V2.2 (2010)	Sweden
copper, from imported concentrates, at refinery	Materials	Metals	1.05E+00	kg	2003	Ecoinvent data V2.2 (2010)	Germany
copper, primary, at refinery, Asia and the Pacific	Materials	Metals	4.79E+00	kg	2003	Ecoinvent data V2.2 (2010)	Asia and the Pacific
copper, primary, at refinery, Europe	Materials	Metals	1.85E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
copper, primary, at refinery, Global	Materials	Metals	3.15E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global
copper, primary, at refinery, ID	Materials	Metals	2.88E+00	kg	2003	Ecoinvent data V2.2 (2010)	Indonesia
copper, primary, at refinery, Latin American and the Caribbean	Materials	Metals	3.24E+00	kg	2003	Ecoinvent data V2.2 (2010)	Latin American and the Caribbean
copper, primary, at refinery, North America	Materials	Metals	4.87E+00	kg	2003	Ecoinvent data V2.2 (2010)	North America
copper, primary, couple production nickel	Materials	Metals	5.07E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global
copper, primary, from platinum group metal production, RU	Materials	Metals	2.00E+00	kg	2002	Ecoinvent data V2.2 (2010)	Russian Federation
copper, primary, from platinum group metal production, SA	Materials	Metals	2.18E+00	kg	2002	Ecoinvent data V2.2 (2010)	South Africa
copper, sConstructiondary, at refinery	Materials	Metals	1.79E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
copper, sConstructiondary, from electronic and electric scrap recycling, at refinery	Materials	Metals	1.04E-01	kg	2005	Ecoinvent data V2.2 (2010)	Sweden
copper, SX-EW, at refinery	Materials	Metals	5.23E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
deep drawing, steel, 10000 kN press, automode operation	Materials	Metals	3.16E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deep drawing, steel, 10000 kN press, single stroke operation	Materials	Metals	4.37E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deep drawing, steel, 3500 kN press, automode operation	Materials	Metals	3.15E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deep drawing, steel, 3500 kN press, single stroke operation	Materials	Metals	3.64E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deep drawing, steel, 38000 kN press, automode operation	Materials	Metals	3.16E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deep drawing, steel, 38000 kN press, single stroke operation	Materials	Metals	4.67E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deep drawing, steel, 650 kN press, automode operation	Materials	Metals	3.15E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deep drawing, steel, 650 kN press, single stroke operation	Materials	Metals	3.34E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deformation stroke, cold impact extrusion, aluminium	Materials	Metals	3.13E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deformation stroke, cold impact extrusion, steel	Materials	Metals	6.84E-02	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deformation stroke, hot impact extrusion, steel	Materials	Metals	8.80E-02	kg	2007	Ecoinvent data V2.2 (2010)	Europe
deformation stroke, warm impact extrusion, steel	Materials	Metals	8.86E-02	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drawing of pipes, steel	Materials	Metals	4.37E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
drilling, CNC, aluminium	Materials	Metals	1.01E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drilling, CNC, brass	Materials	Metals	4.05E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drilling, CNC, cast iron	Materials	Metals	3.17E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drilling, CNC, chromium steel	Materials	Metals	6.53E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drilling, CNC, steel	Materials	Metals	3.63E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drilling, conventional, aluminium	Materials	Metals	9.85E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drilling, conventional, brass	Materials	Metals	3.86E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drilling, conventional, cast iron	Materials	Metals	2.94E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drilling, conventional, chromium steel	Materials	Metals	6.07E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
drilling, conventional, steel	Materials	Metals	3.25E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
ferrochromium, high-carbon, 68% Cr, at plant	Materials	Metals	1.92E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
ferrochromium, high-carbon, 68% Cr, at regional storage	Materials	Metals	2.11E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
ferromanganese, high-coal, 74.5% Mn, at regional storage	Materials	Metals	9.78E-01	kg	2003	Ecoinvent data V2.2 (2010)	Europe
ferronickel, 25% Ni, at plant	Materials	Metals	9.24E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global
gallium, semiconductor-grade, at plant	Materials	Metals	2.05E+02	kg	2005	Ecoinvent data V2.2 (2010)	Global
gallium, semiconductor-grade, at regional storage	Materials	Metals	2.10E+02	kg	2005	Ecoinvent data V2.2 (2010)	Europe
gold, at refinery, AU	Materials	Metals	1.50E+04	kg	2006	Ecoinvent data V2.2 (2010)	Australia
gold, at refinery, CA	Materials	Metals	1.08E+04	kg	2006	Ecoinvent data V2.2 (2010)	Canada
gold, at refinery, SA	Materials	Metals	1.27E+04	kg	2006	Ecoinvent data V2.2 (2010)	South Africa
gold, at refinery, TZ	Materials	Metals	1.49E+04	kg	2006	Ecoinvent data V2.2 (2010)	Tanzania
gold, at refinery, USA	Materials	Metals	1.77E+04	kg	2006	Ecoinvent data V2.2 (2010)	United States
gold, at regional storage	Materials	Metals	1.32E+04	kg	2006	Ecoinvent data V2.2 (2010)	Europe
gold, from combined gold-silver production, at refinery, CL	Materials	Metals	4.47E+04	kg	2006	Ecoinvent data V2.2 (2010)	Switzerlandile
gold, from combined gold-silver production, at refinery, PE	Materials	Metals	6.79E+03	kg	2006	Ecoinvent data V2.2 (2010)	Peru
gold, from combined gold-silver production, at refinery, PG	Materials	Metals	3.58E+04	kg	2006	Ecoinvent data V2.2 (2010)	Papua New Guinea
gold, from combined metal production, at beneficiation	Materials	Metals	3.67E+03	kg	2006	Ecoinvent data V2.2 (2010)	Sweden
gold, from combined metal production, at refinery	Materials	Metals	9.09E+03	kg	2006	Ecoinvent data V2.2 (2010)	Sweden
gold, primary, at refinery	Materials	Metals	1.87E+04	kg	2004	Ecoinvent data V2.2 (2010)	Global
gold, sConstructiondary, at precious metal refinery	Materials	Metals	8.52E+02	kg	2005	Ecoinvent data V2.2 (2010)	Sweden
heat treatment, cold impact extrusion, aluminium	Materials	Metals	1.39E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
heat treatment, cold impact extrusion, steel	Materials	Metals	1.77E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
heat treatment, hot impact extrusion, steel	Materials	Metals	1.69E-02	kg	2007	Ecoinvent data V2.2 (2010)	Europe
hot impact extrusion, steel, 1 stroke	Materials	Metals	1.05E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
hot impact extrusion, steel, 2 strokes	Materials	Metals	1.17E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
hot impact extrusion, steel, 3 strokes	Materials	Metals	1.29E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
hot impact extrusion, steel, 4 strokes	Materials	Metals	1.41E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
hot impact extrusion, steel, 5 strokes	Materials	Metals	1.53E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
hot rolling, steel	Materials	Metals	2.80E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
indium, at regional storage	Materials	Metals	1.54E+02	kg	2005	Ecoinvent data V2.2 (2010)	Europe
iron ore, 46% Fe, at mine	Materials	Metals	4.77E-03	kg	2000	Ecoinvent data V2.2 (2010)	Global
iron ore, 65% Fe, at beneficiation	Materials	Metals	1.78E-02	kg	2000	Ecoinvent data V2.2 (2010)	Global
iron scrap, at plant	Materials	Metals	4.21E-02	kg	2002	Ecoinvent data V2.2 (2010)	Europe
iron sulphate, at plant	Materials	Metals	1.67E-01	kg	1993	Ecoinvent data V2.2 (2010)	Europe
iron-nickel-chromium alloy, at plant	Materials	Metals	4.64E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
leaching residues, indium rich, from zinc circuit, at smelter	Materials	Metals	1.40E-02	kg	2003	Ecoinvent data V2.2 (2010)	Global
lead concentrate, at beneficiation	Materials	Metals	2.96E-01	kg	2003	Ecoinvent data V2.2 (2010)	Global
lead, at regional storage	Materials	Metals	1.06E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
lead, from combined metal production, at beneficiation	Materials	Metals	2.71E-01	kg	2006	Ecoinvent data V2.2 (2010)	Sweden
lead, from combined metal production, at refinery	Materials	Metals	5.14E-01	kg	2006	Ecoinvent data V2.2 (2010)	Sweden
lead, primary, at plant	Materials	Metals	2.12E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
lead, sConstructiondary, at plant	Materials	Metals	6.59E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
lead, sConstructiondary, from electronic and electric scrap recycling, at plant	Materials	Metals	3.47E-02	kg	2005	Ecoinvent data V2.2 (2010)	Sweden
lithium, at plant	Materials	Metals	2.11E+01	kg	2006	Ecoinvent data V2.2 (2010)	Global
magnesium, at plant	Materials	Metals	7.38E+01	kg	1998	Ecoinvent data V2.2 (2010)	Europe
magnesium-alloy, AZ91, at plant	Materials	Metals	6.76E+01	kg	1998	Ecoinvent data V2.2 (2010)	Europe
magnesium-alloy, AZ91, diecasting, at plant	Materials	Metals	1.37E+02	kg	1998	Ecoinvent data V2.2 (2010)	Europe
manganese concentrate, at beneficiation	Materials	Metals	1.48E-02	kg	2003	Ecoinvent data V2.2 (2010)	Global
manganese, at regional storage	Materials	Metals	2.60E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
mercury, liquid, at plant	Materials	Metals	1.21E+01	kg	2000	Ecoinvent data V2.2 (2010)	Global
metal product manufacturing, average metal working	Materials	Metals	1.87E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal values from electric waste, in blister-copper, at converter	Materials	Metals	1.09E+00	kg	2005	Ecoinvent data V2.2 (2010)	Sweden
metal working factory operation, average heat energy	Materials	Metals	2.67E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal working factory operation, heat energy from hard coal	Materials	Metals	3.09E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
metal working factory operation, heat energy from heavy fuel oil	Materials	Metals	2.89E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal working factory operation, heat energy from light fuel oil	Materials	Metals	2.84E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal working factory operation, heat energy from natural gas	Materials	Metals	2.60E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal working machine operation, average process heat	Materials	Metals	1.09E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal working machine operation, process heat from hard coal	Materials	Metals	1.21E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal working machine operation, process heat from heavy fuel oil	Materials	Metals	1.15E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal working machine operation, process heat from light fuel oil	Materials	Metals	1.13E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal working machine operation, process heat from natural gas	Materials	Metals	1.04E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
metal working machine, unspecified, at plant	Materials	Metals	4.45E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
MG-silicon, at plant	Materials	Metals	5.02E+00	kg	2002	Ecoinvent data V2.2 (2010)	Norway
milling, aluminium, average	Materials	Metals	1.02E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, aluminium, dressing	Materials	Metals	1.36E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, aluminium, large parts	Materials	Metals	1.01E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, aluminium, small parts	Materials	Metals	1.10E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, cast iron, average	Materials	Metals	3.15E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, cast iron, dressing	Materials	Metals	4.58E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, cast iron, large parts	Materials	Metals	3.11E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, cast iron, small parts	Materials	Metals	3.49E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, chromium steel, average	Materials	Metals	6.48E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, chromium steel, dressing	Materials	Metals	1.29E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, chromium steel, large parts	Materials	Metals	6.26E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, chromium steel, small parts	Materials	Metals	7.98E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, steel, average	Materials	Metals	3.59E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, steel, dressing	Materials	Metals	8.13E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, steel, large parts	Materials	Metals	3.43E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
milling, steel, small parts	Materials	Metals	4.65E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
molybdenite, at plant	Materials	Metals	2.81E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
molybdenum concentrate, couple production Cu, Asia and the Pacific	Materials	Metals	5.19E+00	kg	2003	Ecoinvent data V2.2 (2010)	Asia and the Pacific
molybdenum concentrate, couple production Cu, Europe	Materials	Metals	1.16E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
molybdenum concentrate, couple production Cu, Global	Materials	Metals	2.95E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global
molybdenum concentrate, couple production Cu, ID	Materials	Metals	2.42E+00	kg	2003	Ecoinvent data V2.2 (2010)	Indonesia
molybdenum concentrate, couple production Cu, Latin American and the Caribbean	Materials	Metals	2.72E+00	kg	2003	Ecoinvent data V2.2 (2010)	Latin American and the Caribbean
molybdenum concentrate, couple production Cu, North America	Materials	Metals	5.14E+00	kg	2003	Ecoinvent data V2.2 (2010)	North America
Molybdenum concentrate, main product	Materials	Metals	2.61E+00	kg	2003	Ecoinvent data V2.2 (2010)	Global
molybdenum, at regional storage	Materials	Metals	7.67E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
nickel, 99.5%, at plant	Materials	Metals	1.09E+01	kg		Ecoinvent data V2.2 (2010)	Global
nickel, primary, from platinum group metal production, RU	Materials	Metals	6.69E+00	kg		Ecoinvent data V2.2 (2010)	Russian Federation
nickel, primary, from platinum group metal production, SA	Materials	Metals	7.36E+00	kg	2002	Ecoinvent data V2.2 (2010)	South Africa
nickel, sConstructiondary, from electronic and electric scrap recycling, at refinery	Materials	Metals	1.70E+00	kg	2005	Ecoinvent data V2.2 (2010)	Sweden
palladium, at regional storage	Materials	Metals	9.73E+03	kg	2002	Ecoinvent data V2.2 (2010)	Europe
palladium, primary, at refinery, RU	Materials	Metals	9.73E+03	kg		Ecoinvent data V2.2 (2010)	Russian Federation
palladium, primary, at refinery, SA	Materials	Metals	1.06E+04	kg		Ecoinvent data V2.2 (2010)	South Africa
palladium, sConstructiondary, at precious metal refinery	Materials	Metals	4.46E+02	kg	2005	Ecoinvent data V2.2 (2010)	Sweden
palladium, sConstructiondary, at refinery	Materials	Metals	7.59E+02	kg	2002	Ecoinvent data V2.2 (2010)	Europe
parkes process crust, from desilverising of lead	Materials	Metals	8.97E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
pellets, iron, at plant	Materials	Metals	8.61E-02	kg	2002	Ecoinvent data V2.2 (2010)	Global
pig iron, at plant	Materials	Metals	1.56E+00	kg		Ecoinvent data V2.2 (2010)	Global
platinum, at regional storage	Materials	Metals	1.48E+04	kg		Ecoinvent data V2.2 (2010)	Europe
platinum, primary, at refinery, RU	Materials	Metals	1.45E+04	kg		Ecoinvent data V2.2 (2010)	Russian

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
platinum, primary, at refinery, SA	Materials	Metals	1.58E+04	kg		Ecoinvent data V2.2 (2010)	Federation South Africa
platinum, sConstructiondary, at refinery	Materials	Metals	7.59E+02	kg		Ecoinvent data V2.2 (2010)	Europe
precious metals from electric waste, in anode slime, at refinery	Materials	Metals	5.91E+01	kg	2005	Ecoinvent data V2.2 (2010)	Sweden
reinforcing steel, at plant	Materials	Metals	1.48E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
rhodium, at regional storage	Materials	Metals	2.90E+04	kg	2002	Ecoinvent data V2.2 (2010)	Europe
rhodium, primary, at refinery, RU	Materials	Metals	3.17E+04	kg	2002	Ecoinvent data V2.2 (2010)	Russian Federation
rhodium, primary, at refinery, SA	Materials	Metals	3.47E+04	kg	2002	Ecoinvent data V2.2 (2010)	South Africa
rhodium, sConstructiondary, at refinery	Materials	Metals	7.65E+02	kg	2002	Ecoinvent data V2.2 (2010)	Europe
section bar extrusion, aluminium	Materials	Metals	1.03E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
section bar rolling, steel	Materials	Metals	1.99E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
sheet rolling, aluminium	Materials	Metals	6.02E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
sheet rolling, chromium steel	Materials	Metals	5.58E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
sheet rolling, copper	Materials	Metals	3.54E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
sheet rolling, steel	Materials	Metals	3.61E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
silicon, electronic grade, at plant	Materials	Metals	8.62E+01	kg	2005	Ecoinvent data V2.2 (2010)	Germany
silicon, electronic grade, off-grade, at plant	Materials	Metals	2.71E+01	kg	2005	Ecoinvent data V2.2 (2010)	Germany
silicon, multi-Si, casted, at plant	Materials	Metals	6.32E+01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
silicon, production mix, photovoltaics, at plant	Materials	Metals	4.60E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
silicon, solar grade, modified Siemens process, at plant	Materials	Metals	3.99E+01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
silver, at regional storage	Materials	Metals	1.01E+02	kg	2005	Ecoinvent data V2.2 (2010)	Europe
silver, from combined gold-silver production, at refinery, CL	Materials	Metals	7.65E+02	kg	2006	Ecoinvent data V2.2 (2010)	Switzerlandile
silver, from combined gold-silver production, at refinery, Glboal	Materials	Metals	4.42E+02	kg	2004	Ecoinvent data V2.2 (2010)	Global
silver, from combined gold-silver production, at refinery, PE	Materials	Metals	1.12E+02	kg	2006	Ecoinvent data V2.2 (2010)	Peru
silver, from combined gold-silver production, at refinery, PG	Materials	Metals	8.64E+02	kg	2006	Ecoinvent data V2.2 (2010)	Papua New Guinea
silver, from combined metal production, at beneficiation	Materials	Metals	6.26E+01	kg	2006	Ecoinvent data V2.2 (2010)	Sweden

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
silver, from combined metal production, at refinery	Materials	Metals	1.55E+02	kg	2006	Ecoinvent data V2.2 (2010)	Sweden
silver, from copper production, at refinery	Materials	Metals	2.02E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
silver, from lead production, at refinery	Materials	Metals	5.53E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
silver, sConstructiondary, at precious metal refinery	Materials	Metals	1.46E+01	kg	2005	Ecoinvent data V2.2 (2010)	Sweden
sinter, iron, at plant	Materials	Metals	3.90E-01	kg	2002	Ecoinvent data V2.2 (2010)	Global
soft solder, Sn97Cu3, at plant	Materials	Metals	1.60E+01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
solder, bar, Sn63Pb37, for electronics industry, at plant	Materials	Metals	1.14E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
solder, bar, Sn95.5Ag3.9Cu0.6, for electronics industry, at plant	Materials	Metals	2.06E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
solder, paste, Sn63Pb37, for electronics industry, at plant	Materials	Metals	1.72E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
solder, paste, Sn95.5Ag3.9Cu0.6, for electronics industry, at plant	Materials	Metals	2.64E+01	kg	2005	Ecoinvent data V2.2 (2010)	Global
steel product manufacturing, average metal working	Materials	Metals	1.80E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
steel, converter, chromium steel 18/8, at plant	Materials	Metals	4.48E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
steel, converter, low-alloyed, at plant	Materials	Metals	2.09E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
steel, converter, unalloyed, at plant	Materials	Metals	1.66E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
steel, electric, chromium steel 18/8, at plant	Materials	Metals	3.87E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
steel, electric, un- and low-alloyed, at plant	Materials	Metals	4.25E-01	kg	2001	Ecoinvent data V2.2 (2010)	Europe
steel, low-alloyed, at plant	Materials	Metals	1.76E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
surface treatment, cold impact extrusion, aluminium	Materials	Metals	1.18E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
surface treatment, cold impact extrusion, steel	Materials	Metals	2.87E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
tantalum, powder, capacitor-grade, at regional storage	Materials	Metals	2.60E+02	kg	2003	Ecoinvent data V2.2 (2010)	Global
tellurium, semiconductor-grade, at plant	Materials	Metals	7.52E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
tin, at regional storage	Materials	Metals	1.72E+01	kg	2003	Ecoinvent data V2.2 (2010)	Europe
titanium zinc plate, without pre-weathering, at plant	Materials	Metals	4.28E+00	kg	2002	Ecoinvent data V2.2 (2010)	Germany
turning, aluminium, CNC, average	Materials	Metals	1.11E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, aluminium, CNC, primarily dressing	Materials	Metals	1.19E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
turning, aluminium, CNC, primarily roughing	Materials	Metals	1.02E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, aluminium, conventional, average	Materials	Metals	1.00E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, aluminium, conventional, primarily dressing	Materials	Metals	1.01E+01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, aluminium, conventional, primarily roughing	Materials	Metals	9.89E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, brass, CNC, average	Materials	Metals	4.60E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, brass, CNC, primarily dressing	Materials	Metals	5.07E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, brass, CNC, primarily roughing	Materials	Metals	4.13E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, brass, conventional, average	Materials	Metals	3.96E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, brass, conventional, primarily dressing	Materials	Metals	4.03E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, brass, conventional, primarily roughing	Materials	Metals	3.89E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, cast iron, CNC, average	Materials	Metals	3.75E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, cast iron, CNC, primarily dressing	Materials	Metals	4.30E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, cast iron, CNC, primarily roughing	Materials	Metals	3.20E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, cast iron, conventional, average	Materials	Metals	3.03E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, cast iron, conventional, primarily dressing	Materials	Metals	3.11E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, cast iron, conventional, primarily roughing	Materials	Metals	2.95E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, chromium steel, CNC, average	Materials	Metals	7.57E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, chromium steel, CNC, primarily dressing	Materials	Metals	8.77E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, chromium steel, CNC, primarily roughing	Materials	Metals	6.38E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, chromium steel, conventional, average	Materials	Metals	6.20E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, chromium steel, conventional, primarily dressing	Materials	Metals	6.38E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, chromium steel, conventional, primarily roughing	Materials	Metals	6.03E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, steel, CNC, average	Materials	Metals	4.36E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, steel, CNC, primarily dressing	Materials	Metals	5.21E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, steel, CNC, primarily roughing	Materials	Metals	3.52E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, steel, conventional, average	Materials	Metals	3.34E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
turning, steel, conventional, primarily dressing	Materials	Metals	3.47E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
turning, steel, conventional, primarily roughing	Materials	Metals	3.22E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
warm impact extrusion, steel, 1 stroke	Materials	Metals	8.54E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
warm impact extrusion, steel, 2 strokes	Materials	Metals	9.76E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
warm impact extrusion, steel, 3 strokes	Materials	Metals	1.10E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
warm impact extrusion, steel, 4 strokes	Materials	Metals	1.22E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
warm impact extrusion, steel, 5 strokes	Materials	Metals	1.34E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
warming, hot impact extrusion, steel	Materials	Metals	5.93E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
warming, warm impact extrusion, steel	Materials	Metals	4.17E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
wire drawing, copper	Materials	Metals	4.82E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
wire drawing, steel	Materials	Metals	3.97E-01	kg	2002	Ecoinvent data V2.2 (2010)	Europe
zinc concentrate, at beneficiation	Materials	Metals	4.53E-01	kg	2003	Ecoinvent data V2.2 (2010)	Global
zinc, from combined metal production, at beneficiation	Materials	Metals	4.14E-01	kg	2006	Ecoinvent data V2.2 (2010)	Sweden
zinc, from combined metal production, at refinery	Materials	Metals	8.10E-01	kg	2006	Ecoinvent data V2.2 (2010)	Sweden
zinc, primary, at regional storage	Materials	Metals	3.38E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
fuel elements BWR, UO2 4.0% & MOX, at nuclear fuel fabrication plant, DE	Materials	Nuclear engineering	2.90E+03	kg	2003	Ecoinvent data V2.2 (2010)	Germany
fuel elements BWR, UO2 4.0% & MOX, at nuclear fuel fabrication plant, UCTE	Materials	Nuclear engineering	1.89E+03	kg	2003	Ecoinvent data V2.2 (2010)	UCTE
fuel elements PWR, UO2 3.8% & MOX, at nuclear fuel fabrication plant, FR	Materials	Nuclear engineering	1.26E+03	kg	2003	Ecoinvent data V2.2 (2010)	France
fuel elements PWR, UO2 3.9% & MOX, at nuclear fuel fabrication plant	Materials	Nuclear engineering	1.74E+03	kg	2003	Ecoinvent data V2.2 (2010)	UCTE
fuel elements PWR, UO2 4.0% & MOX, at nuclear fuel fabrication plant	Materials	Nuclear engineering	2.74E+03	kg	2003	Ecoinvent data V2.2 (2010)	Germany
fuel elements PWR, UO2 4.2% & MOX, at nuclear fuel fabrication plant	Materials	Nuclear engineering	1.44E+03	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
fuel elements PWR, UO2 4.2% centrifuge & MOX, at nuclear fuel fabrication plant	Materials	Nuclear engineering	1.45E+03	kg	2003	Ecoinvent data V2.2 (2010)	Switzerland
MOX fuel element for LWR, at nuclear fuel fabrication plant	Materials	Nuclear engineering	4.09E+01	kg	2000	Ecoinvent data V2.2 (2010)	UCTE
nuclear spent fuel, in conditioning, at plant, CH	Materials	Nuclear engineering	1.25E+02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
nuclear spent fuel, in conditioning, at plant, CN	Materials	Nuclear	1.24E+02	kg	2002	Ecoinvent data V2.2 (2010)	China

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
		engineering					
nuclear spent fuel, in reprocessing, at plant	Materials	Nuclear engineering	3.12E+02	kg	2002	Ecoinvent data V2.2 (2010)	Europe
U enriched 3.0%, in fuel element for LWR, at nuclear fuel fabrication plant	Materials	Nuclear engineering	2.30E+03	kg	2006	Ecoinvent data V2.2 (2010)	United States
U enriched 3.8%, in fuel element for LWR, at nuclear fuel fabrication plant, CH	Materials	Nuclear engineering	3.26E+03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
U enriched 3.8%, in fuel element for LWR, at nuclear fuel fabrication plant, CN	Materials	Nuclear engineering	2.43E+03	kg	2000	Ecoinvent data V2.2 (2010)	China
U enriched 3.8%, in fuel element for LWR, at nuclear fuel fabrication plant, FR	Materials	Nuclear engineering	1.40E+03	kg	2000	Ecoinvent data V2.2 (2010)	France
U enriched 3.8%, in fuel element for LWR, at nuclear fuel fabrication plant, USA	Materials	Nuclear engineering	3.13E+03	kg	2006	Ecoinvent data V2.2 (2010)	United States
U enriched 3.9%, in fuel element for LWR, at nuclear fuel fabrication plant, UCTE	Materials	Nuclear engineering	2.00E+03	kg	2000	Ecoinvent data V2.2 (2010)	UCTE
U enriched 4.0%, in fuel element for LWR, at nuclear fuel fabrication plant, DE	Materials	Nuclear engineering	3.22E+03	kg	2000	Ecoinvent data V2.2 (2010)	Germany
U enriched 4.0%, in fuel element for LWR, at nuclear fuel fabrication plant, UCTE	Materials	Nuclear engineering	2.05E+03	kg	2000	Ecoinvent data V2.2 (2010)	UCTE
U enriched 4.2%, centrifugal enrichment, at nuclear fuel fabrication plant	Materials	Nuclear engineering	1.57E+03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
U enriched 4.2%, in fuel element for LWR, at nuclear fuel fabrication plant	Materials	Nuclear engineering	1.56E+03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
uranium natural, at mine	Materials	Nuclear engineering	1.98E+01	kg	2000	Ecoinvent data V2.2 (2010)	Global
uranium natural, at open pit mine	Materials	Nuclear engineering	6.79E+00	kg	1992	Ecoinvent data V2.2 (2010)	North America
uranium natural, at underground mine	Materials	Nuclear engineering	2.85E+01	kg	1992	Ecoinvent data V2.2 (2010)	North America
uranium natural, in uranium hexafluoride, at conversion plant, CN	Materials	Nuclear engineering	1.59E+02	kg	2000	Ecoinvent data V2.2 (2010)	China
uranium natural, in uranium hexafluoride, at conversion plant, USA	Materials	Nuclear engineering	1.52E+02	kg	2000	Ecoinvent data V2.2 (2010)	United States
uranium natural, in yellowcake, at mill plant	Materials	Nuclear engineering	9.14E+01	kg	1992	Ecoinvent data V2.2 (2010)	North America

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
bitumen, at refinery, CH	Materials	Oil	5.95E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
bitumen, at refinery, Europe	Materials	Oil	4.31E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
crude oil, at production offshore, GB	Materials	Oil	2.03E-02	kg	2000	Ecoinvent data V2.2 (2010)	United Kingdom
crude oil, at production offshore, NL	Materials	Oil	5.34E-02	kg	2000	Ecoinvent data V2.2 (2010)	Netherlands
crude oil, at production offshore, NO	Materials	Oil	6.51E-02	kg	2000	Ecoinvent data V2.2 (2010)	Norway
crude oil, at production onshore, Africa	Materials	Oil	3.17E-01	kg	2000	Ecoinvent data V2.2 (2010)	Africa
crude oil, at production onshore, Middle East	Materials	Oil	1.17E-01	kg	2000	Ecoinvent data V2.2 (2010)	Middle East
crude oil, at production onshore, NL	Materials	Oil	3.74E-02	kg	2000	Ecoinvent data V2.2 (2010)	Netherlands
crude oil, at production onshore, RU	Materials	Oil	5.44E-01	kg	2000	Ecoinvent data V2.2 (2010)	Russian Federation
crude oil, at production, Nigeria	Materials	Oil	7.45E-01	kg	2000	Ecoinvent data V2.2 (2010)	Nigeria
crude oil, production Africa, at long distance transport, CH	Materials	Oil	3.44E-01	kg	1994	Ecoinvent data V2.2 (2010)	Switzerland
crude oil, production Africa, at long distance transport, Europe	Materials	Oil	3.45E-01	kg	1994	Ecoinvent data V2.2 (2010)	Europe
crude oil, production Latin America, at long distance transport	Materials	Oil	1.66E-01	kg	1994	Ecoinvent data V2.2 (2010)	Europe
crude oil, production Middle East, at long distance transport, CH	Materials	Oil	1.93E-01	kg	1994	Ecoinvent data V2.2 (2010)	Switzerland
crude oil, production Middle East, at long distance transport, Europe	Materials	Oil	2.33E-01	kg	1994	Ecoinvent data V2.2 (2010)	Europe
crude oil, production Nigeria, at long distance transport, CH	Materials	Oil	8.02E-01	kg	1994	Ecoinvent data V2.2 (2010)	Switzerland
crude oil, production Nigeria, at long distance transport, Europe	Materials	Oil	7.96E-01	kg	1994	Ecoinvent data V2.2 (2010)	Europe
crude oil, production NL, at long distance transport	Materials	Oil	4.99E-02	kg	1994	Ecoinvent data V2.2 (2010)	Europe
crude oil, production NO, at long distance transport	Materials	Oil	7.24E-02	kg	1994	Ecoinvent data V2.2 (2010)	Europe
crude oil, production Russain Federation, at long distance transport	Materials	Oil	6.27E-01	kg	1994	Ecoinvent data V2.2 (2010)	Europe
crude oil, production UK, at long distance transport	Materials	Oil	2.76E-02	kg	1994	Ecoinvent data V2.2 (2010)	Europe
crude oil, used in drilling tests	Materials	Oil	3.59E+00	kg	1999	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
diesel, at refinery, CH	Materials	Oil	6.28E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
diesel, at refinery, Global	Materials	Oil	4.86E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
diesel, at regional storage, CH	Materials	Oil	6.01E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
diesel, at regional storage, Europe	Materials	Oil	5.12E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
diesel, low-sulphur, at refinery, CH	Materials	Oil	6.37E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
diesel, low-sulphur, at refinery, Europe	Materials	Oil	4.99E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
diesel, low-sulphur, at regional storage, CH	Materials	Oil	6.12E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
diesel, low-sulphur, at regional storage, Europe	Materials	Oil	5.25E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
heavy fuel oil, at refinery, CH	Materials	Oil	5.91E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
heavy fuel oil, at refinery, Europe	Materials	Oil	4.28E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
heavy fuel oil, at regional storage, CH	Materials	Oil	6.26E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
heavy fuel oil, at regional storage, Europe	Materials	Oil	4.52E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
heavy fuel oil, burned in refinery furnace, CH	Materials	Oil	3.83E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
heavy fuel oil, burned in refinery furnace, Europe	Materials	Oil	3.55E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
kerosene, at refinery, CH	Materials	Oil	6.28E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
kerosene, at refinery, Europe	Materials	Oil	4.82E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
kerosene, at regional storage, CH	Materials	Oil	5.87E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
kerosene, at regional storage, Europe	Materials	Oil	5.06E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
light fuel oil, at refinery, CH	Materials	Oil	6.28E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
light fuel oil, at refinery, Europe	Materials	Oil	4.85E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
light fuel oil, at regional storage, CH	Materials	Oil	5.91E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
light fuel oil, at regional storage, Europe	Materials	Oil	5.09E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
naphtha, APME mix, at refinery	Materials	Oil	3.47E-01	kg	2001	Ecoinvent data V2.2 (2010)	Europe
naphtha, at refinery, CH	Materials	Oil	5.84E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
naphtha, at refinery, Europe	Materials	Oil	4.23E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
naphtha, at regional storage, CH	Materials	Oil	6.19E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
naphtha, at regional storage, Europe	Materials	Oil	4.47E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
petrol, 15% vol. ETBE additive, EtOH f. biomass, prod., Europe, at service station	Materials	Oil	8.64E-01	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
petrol, 15% vol. ETBE additive, with ethanol from biomass, at refinery	Materials	Oil	8.24E-01	kg	2008	Ecoinvent data V2.2 (2010)	Europe
petrol, 4% vol. ETBE additive, EtOH f. biomass, prod. Europe, at service station	Materials	Oil	7.76E-01	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
petrol, 4% vol. ETBE additive, with ethanol from biomass, at refinery	Materials	Oil	7.36E-01	kg	2008	Ecoinvent data V2.2 (2010)	Europe
petrol, 5% vol. ethanol, from biomass, at service station	Materials	Oil	8.13E-01	kg	2008	Ecoinvent data V2.2 (2010)	Switzerland
petrol, low-sulphur, at refinery, CH	Materials	Oil	7.77E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
petrol, low-sulphur, at refinery, Europe	Materials	Oil	7.04E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
petrol, low-sulphur, at regional storage, CH	Materials	Oil	7.89E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
petrol, low-sulphur, at regional storage, Europe	Materials	Oil	7.30E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
petrol, two-stroke blend, at regional storage, CH	Materials	Oil	7.74E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
petrol, two-stroke blend, at regional storage, Europe	Materials	Oil	7.14E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
petrol, unleaded, at refinery, CH	Materials	Oil	7.61E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
petrol, unleaded, at refinery, Europe	Materials	Oil	6.81E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
petrol, unleaded, at regional storage, CH	Materials	Oil	7.68E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
petrol, unleaded, at regional storage, Europe	Materials	Oil	7.06E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
petroleum coke, at refinery, Europe	Materials	Oil	5.21E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
propane/ butane, at refinery, CH	Materials	Oil	6.97E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
propane/ butane, at refinery, Europe	Materials	Oil	6.05E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
refinery gas, at refinery, CH	Materials	Oil	6.89E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
refinery gas, at refinery, Europe	Materials	Oil	5.88E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
refinery gas, burned in furnace, CH	Materials	Oil	3.52E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
refinery gas, burned in furnace, Europe	Materials	Oil	3.42E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
core board, at plant	Materials	Packaging	4.92E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
corrugated board base paper, kraftliner, at plant	Materials	Packaging	6.60E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board base paper, semichemical fluting, at plant	Materials	Packaging	1.04E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board base paper, testliner, at plant	Materials	Packaging	8.21E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board base paper, wellenstoff, at plant	Materials	Packaging	8.18E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board, fresh fibre, single wall, at plant, CH	Materials	Packaging	1.03E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
corrugated board, fresh fibre, single wall, at plant, Europe	Materials	Packaging	9.90E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
corrugated board, mixed fibre, single wall, at plant, CH	Materials	Packaging	9.51E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
corrugated board, mixed fibre, single wall, at plant, Europe	Materials	Packaging	9.40E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board, recycling fibre, double wall, at plant, CH	Materials	Packaging	9.67E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
corrugated board, recycling fibre, double wall, at plant, Europe	Materials	Packaging	9.60E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board, recycling fibre, single wall, at plant, CH	Materials	Packaging	9.90E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
corrugated board, recycling fibre, single wall, at plant, Europe	Materials	Packaging	9.88E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
folding boxboard, FBB, at plant	Materials	Packaging	1.31E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
kraft paper, bleached, at plant	Materials	Packaging	1.69E+00	kg	1993	Ecoinvent data V2.2 (2010)	Europe
kraft paper, unbleached, at plant	Materials	Packaging	8.49E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
liquid packaging board, at plant	Materials	Packaging	5.96E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
packaging glass, brown, at plant, CH	Materials	Packaging	6.92E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, brown, at plant, DE	Materials	Packaging	5.99E-01	kg	1996	Ecoinvent data V2.2 (2010)	Germany
packaging glass, brown, at plant, Europe	Materials	Packaging	8.95E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
packaging glass, brown, at regional storage	Materials	Packaging	7.77E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, gr , at plant, CH	Materials	Packaging	5.44E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, gr , at plant, DE	Materials	Packaging	5.43E-01	kg	1996	Ecoinvent data V2.2 (2010)	Germany
packaging glass, gr , at plant, Europe	Materials	Packaging	8.74E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
packaging glass, gr , at regional storage	Materials	Packaging	6.70E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, white, at plant, CH	Materials	Packaging	5.75E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging glass, white, at plant, DE	Materials	Packaging	6.18E-01	kg	1996	Ecoinvent data V2.2 (2010)	Germany
packaging glass, white, at plant, Europe	Materials	Packaging	8.89E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
packaging glass, white, at regional storage	Materials	Packaging	7.02E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
packaging, corrugated board, mixed fibre, single wall, at plant, CH	Materials	Packaging	1.24E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
packaging, corrugated board, mixed fibre, single wall, at plant, Europe	Materials	Packaging	1.14E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
paper, newsprint, 0% DIP, at plant	Materials	Packaging	1.30E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, newsprint, at plant	Materials	Packaging	8.48E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, newsprint, at regional storage, CH	Materials	Packaging	9.66E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
paper, newsprint, at regional storage, Europe	Materials	Packaging	1.29E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, newsprint, DIP containing, at plant	Materials	Packaging	1.07E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, recycling, no deinking, at plant	Materials	Packaging	8.29E-01	kg	1993	Ecoinvent data V2.2 (2010)	Europe
paper, recycling, with deinking, at plant	Materials	Packaging	1.56E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodcontaining, LWC, at plant	Materials	Packaging	1.40E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, wood-containing, LWC, at regional storage, CH	Materials	Packaging	1.48E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, wood-containing, LWC, at regional storage, Europe	Materials	Packaging	1.52E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodcontaining, supercalendred (SC), at plant	Materials	Packaging	1.07E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, wood-containing, supercalendred (SC), at regional storage, CH	Materials	Packaging	1.15E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, wood-containing, supercalendred (SC), at regional storage, Europe	Materials	Packaging	1.19E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, coated, at integrated mill	Materials	Packaging	1.13E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, coated, at non-integrated mill	Materials	Packaging	1.17E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, coated, at regional storage, CH	Materials	Packaging	1.19E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, woodfree, coated, at regional storage, Europe	Materials	Packaging	1.27E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, uncoated, at integrated mill	Materials	Packaging	8.52E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, uncoated, at non-integrated mill	Materials	Packaging	1.47E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, uncoated, at regional storage, CH	Materials	Packaging	1.21E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, woodfree, uncoated, at regional storage, Europe	Materials	Packaging	1.33E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
polystyrene, expandable, at plant	Materials	Packaging	3.38E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
polystyrene, general purpose, GPPS, at plant	Materials	Packaging	3.51E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
polystyrene, high impact, HIPS, at plant	Materials	Packaging	3.50E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
polyurethane, flexible foam, at plant	Materials	Packaging	4.85E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
polyurethane, rigid foam, at plant	Materials	Packaging	4.32E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
production of carton board boxes, gravure printing, at plant	Materials	Packaging	3.05E-01	kg	1993	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
production of carton board boxes, offset printing, at plant	Materials	Packaging	3.63E-01	kg	1993	Ecoinvent data V2.2 (2010)	Switzerland
production of liquid packaging board containers, at plant	Materials	Packaging	1.46E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
raw cork, at forest road	Materials	Packaging	1.96E-02	kg	2003	Ecoinvent data V2.2 (2010)	Europe
solid bleached board, SBB, at plant	Materials	Packaging	1.08E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
solid unbleached board, SUB, at plant	Materials	Packaging	9.08E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
whitelined chipboard, WLC, at plant	Materials	Packaging	1.08E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
acrylic binder, 34% in H2O, at plant	Materials	Paint	1.46E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
acrylic dispersion, 65% in H2O, at plant	Materials	Paint	2.15E+00	kg	1996	Ecoinvent data V2.2 (2010)	Europe
acrylic varnish, 87.5% in H2O, at plant	Materials	Paint	1.88E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
adhesive for metals, at plant	Materials	Paint	4.52E+00	kg	2003	Ecoinvent data V2.2 (2010)	Germany
alkyd paint, white, 60% in H2O, at plant	Materials	Paint	2.74E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
alkyd paint, white, 60% in solvent, at plant	Materials	Paint	2.87E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
alkyd resin, long oil, 70% in white spirit, at plant	Materials	Paint	3.57E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
melamine formaldehyde resin, at plant	Materials	Paint	4.61E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
phenolic resin, at plant	Materials	Paint	4.16E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
polyester resin, unsaturated, at plant	Materials	Paint	7.47E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
printing colour, offset, 47.5% solvent, at plant	Materials	Paint	1.81E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
printing colour, rotogravure, 55% toluene, at plant	Materials	Paint	2.70E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
resin size, at plant	Materials	Paint	1.56E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
urea formaldehyde resin, at plant	Materials	Paint	2.85E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
white spirit, at plant	Materials	Paint	9.32E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
wood preservative, creosote, at plant	Materials	Paint	1.57E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
wood preservative, inorganic salt, containing Cr, at plant	Materials	Paint	2.55E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
wood preservative, organic salt, Cr-free, at plant	Materials	Paint	3.13E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
chemi-thermomechanical pulp, at plant, Europe	Materials	Paper	8.93E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
core board, at plant, Europe	Materials	Paper	4.92E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
corrugated board base paper, kraftliner, at plant	Materials	Paper	6.60E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board base paper, semichemical fluting, at plant	Materials	Paper	1.04E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board base paper, testliner, at plant	Materials	Paper	8.21E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
corrugated board base paper, wellenstoff, at plant	Materials	Paper	8.18E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board, fresh fibre, single wall, at plant, CH	Materials	Paper	1.03E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
corrugated board, fresh fibre, single wall, at plant, Europe	Materials	Paper	9.90E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board, mixed fibre, single wall, at plant, CH	Materials	Paper	9.51E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
corrugated board, mixed fibre, single wall, at plant, Europe	Materials	Paper	9.40E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board, recycling fibre, double wall, at plant, CH	Materials	Paper	9.67E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
corrugated board, recycling fibre, double wall, at plant, Europe	Materials	Paper	9.60E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
corrugated board, recycling fibre, single wall, at plant, CH	Materials	Paper	9.90E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
corrugated board, recycling fibre, single wall, at plant, Europe	Materials	Paper	9.88E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
folding boxboard, FBB, at plant, Europe	Materials	Paper	1.31E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
kraft paper, bleached, at plant, Europe	Materials	Paper	1.69E+00	kg	1993	Ecoinvent data V2.2 (2010)	Europe
kraft paper, unbleached, at plant, Europe	Materials	Paper	8.49E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
liquid packaging board, at plant, Europe	Materials	Paper	5.96E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
packaging, corrugated board, mixed fibre, single wall, at plant, CH	Materials	Paper	1.24E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
packaging, corrugated board, mixed fibre, single wall, at plant, Europe	Materials	Paper	1.14E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
paper, newsprint, 0% DIP, at plant, Europe	Materials	Paper	1.30E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, newsprint, at plant, CH	Materials	Paper	8.48E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, newsprint, at regional storage, CH	Materials	Paper	9.66E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, newsprint, at regional storage, Europe	Materials	Paper	1.29E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, newsprint, DIP containing, at plant, Europe	Materials	Paper	1.07E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, recycling, no deinking, at plant, Europe	Materials	Paper	8.29E-01	kg	1993	Ecoinvent data V2.2 (2010)	Europe
paper, recycling, with deinking, at plant, Europe	Materials	Paper	1.56E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
paper, woodcontaining, LWC, at plant, Europe	Materials	Paper	1.40E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, wood-containing, LWC, at regional storage, CH	Materials	Paper	1.48E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, wood-containing, LWC, at regional storage, Europe	Materials	Paper	1.52E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodcontaining, supercalendred (SC), at plant, Europe	Materials	Paper	1.07E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, wood-containing, supercalendred (SC), at regional storage, CH	Materials	Paper	1.15E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, wood-containing, supercalendred (SC), at regional storage, Europe	Materials	Paper	1.19E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, coated, at integrated mill, Europe	Materials	Paper	1.13E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, coated, at non-integrated mill, Europe	Materials	Paper	1.17E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, coated, at regional storage, CH	Materials	Paper	1.19E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, woodfree, coated, at regional storage, Europe	Materials	Paper	1.27E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, uncoated, at integrated mill, Europe	Materials	Paper	8.52E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, uncoated, at non-integrated mill, Europe	Materials	Paper	1.47E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
paper, woodfree, uncoated, at regional storage, CH	Materials	Paper	1.21E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
paper, woodfree, uncoated, at regional storage, Europe	Materials	Paper	1.33E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
production of carton board boxes, gravure printing, at plant, CH	Materials	Paper	3.05E-01	kg	1993	Ecoinvent data V2.2 (2010)	Switzerland
production of carton board boxes, offset printing, at plant, CH	Materials	Paper	3.63E-01	kg	1993	Ecoinvent data V2.2 (2010)	Switzerland
production of liquid packaging board containers, at plant, Europe	Materials	Paper	1.46E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
solid bleached board, SBB, at plant, Europe	Materials	Paper	1.08E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
solid unbleached board, SUB, at plant, Europe	Materials	Paper	9.08E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
stone groundwood pulp, SGW, at plant, Europe	Materials	Paper	8.49E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sulphate pulp, average, at regional storage, CH	Materials	Paper	7.88E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
sulphate pulp, average, at regional storage, Europe	Materials	Paper	8.01E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sulphate pulp, ECF bleached, at plant, Europe	Materials	Paper	5.23E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sulphate pulp, from eucalyptus ssp. (SFM), unbleached, at pulpmill, Thailand	Materials	Paper	4.58E-01	kg	2005	Ecoinvent data V2.2 (2010)	Thailand
sulphate pulp, from eucalyptus ssp. (SFM), unbleached, TH, at maritime harbour, Europe	Materials	Paper	6.79E-01	kg	2005	Ecoinvent data V2.2 (2010)	Europe
sulphate pulp, TCF bleached, at plant, Europe	Materials	Paper	4.40E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sulphate pulp, unbleached, at plant, Europe	Materials	Paper	3.90E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
sulphite pulp, bleached, at plant, Europe	Materials	Paper	5.14E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
thermo-mechanical pulp, at plant, Europe	Materials	Paper	7.52E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
waste paper, mixed, from public collection, for further treatment, CH	Materials	Paper	4.65E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
waste paper, mixed, from public collection, for further treatment, Europe	Materials	Paper	6.80E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
waste paper, sorted, for further treatment, CH	Materials	Paper	8.57E-02	kg	2007	Ecoinvent data V2.2 (2010)	Switzerland
waste paper, sorted, for further treatment, Europe	Materials	Paper	1.23E-01	kg	2007	Ecoinvent data V2.2 (2010)	Europe
whitelined chipboard, WLC, at plant, Europe	Materials	Paper	1.08E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
CZ single crystalline silicon, electronics, at plant	Materials	Photo-electric	2.53E+02	kg	2006	Ecoinvent data V2.2 (2010)	Europe
CZ single crystalline silicon, photovoltaics, at plant	Materials	Photo-electric	1.04E+02	kg	2006	Ecoinvent data V2.2 (2010)	Europe
metallization paste, back side, aluminium, at plant	Materials	Photo-electric	1.03E+01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
metallization paste, back side, at plant	Materials	Photo-electric	6.91E+01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
metallization paste, front side, at plant	Materials	Photo-electric	8.51E+01	kg	2006	Ecoinvent data V2.2 (2010)	Europe
acrylonitrile-butadiene-styrene copolymer, ABS, at plant	Materials	Plastics	4.40E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
bitumen adhesive compound, cold, at plant	Materials	Plastics	4.06E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
bitumen adhesive compound, hot, at plant	Materials	Plastics	5.71E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe
bitumen sealing Alu80, at plant	Materials	Plastics	1.40E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
bitumen sealing V60, at plant	Materials	Plastics	6.55E-01	kg	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
bitumen sealing VA4, at plant	Materials	Plastics	1.17E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
bitumen sealing, at plant	Materials	Plastics	1.11E+00	kg	1993	Ecoinvent data V2.2 (2010)	Europe
bitumen sealing, polymer EP4 flame retardant, at plant	Materials	Plastics	8.26E-01	kg	1993	Ecoinvent data V2.2 (2010)	Europe
blow moulding	Materials	Plastics	1.09E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
butadiene, at plant	Materials	Plastics	1.17E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
butene, mixed, at plant	Materials	Plastics	1.53E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
calendering, rigid sheets	Materials	Plastics	3.78E-01	kg	1997	Ecoinvent data V2.2 (2010)	Europe
epoxy resin insulator (Al2O3), at plant	Materials	Plastics	3.46E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
epoxy resin insulator (SiO2), at plant	Materials	Plastics	2.73E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
epoxy resin, liquid, at plant	Materials	Plastics	6.73E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
epoxy resin, liquid, disaggregated data, at plant	Materials	Plastics	1.53E+01	kg	1995	Ecoinvent data V2.2 (2010)	Europe
ethylene vinyl acetate copolymer, at plant	Materials	Plastics	2.11E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
ethylene, average, at plant	Materials	Plastics	1.40E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
ethylene, pipeline system, at plant	Materials	Plastics	1.47E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
ethylvinylacetate, foil, at plant	Materials	Plastics	2.71E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
extrusion, plastic film	Materials	Plastics	5.24E-01	kg	1997	Ecoinvent data V2.2 (2010)	Europe
extrusion, plastic pipes	Materials	Plastics	3.78E-01	kg	1997	Ecoinvent data V2.2 (2010)	Europe
fleece production, polyethylene terephthalate	Materials	Plastics	5.61E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
fleece, polyethylene, at plant	Materials	Plastics	2.88E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
foaming, expanding	Materials	Plastics	6.94E-01	kg	1995	Ecoinvent data V2.2 (2010)	Europe
glass fibre reinforced plastic, polyamide, injection moulding, at plant	Materials	Plastics	8.81E+00	kg	1993	Ecoinvent data V2.2 (2010)	Europe
glass fibre reinforced plastic, polyester resin, hand lay-up, at plant	Materials	Plastics	4.88E+00	kg	1993	Ecoinvent data V2.2 (2010)	Europe
injection moulding	Materials	Plastics	1.33E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
methyl methacrylate, at plant	Materials	Plastics	6.70E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
methylene diphenyl diisocyanate, at plant	Materials	Plastics	4.03E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
modified starch, at plant	Materials	Plastics	2.02E+00	kg	2007	Ecoinvent data V2.2 (2010)	Europe
natural rubber based sealing, at plant	Materials	Plastics	1.95E+00	kg	2003	Ecoinvent data V2.2 (2010)	Germany
nylon 6, at plant	Materials	Plastics	9.28E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
nylon 6, glass-filled, at plant	Materials	Plastics	7.33E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
nylon 66, at plant	Materials	Plastics	8.02E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
nylon 66, glass-filled, at plant	Materials	Plastics	7.05E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
packaging film, LDPE, at plant	Materials	Plastics	2.70E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
polybutadiene, at plant	Materials	Plastics	3.92E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
polycarbonate, at plant	Materials	Plastics	7.79E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polyethylene terephthalate, granulate, amorphous, at plant	Materials	Plastics	2.70E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
polyethylene terephthalate, granulate, bottle grade, at plant	Materials	Plastics	2.90E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
polyethylene, HDPE, granulate, at plant	Materials	Plastics	1.95E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polyethylene, LDPE, granulate, at plant	Materials	Plastics	2.10E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polyethylene, LLDPE, granulate, at plant	Materials	Plastics	1.85E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polylactide, granulate, at plant	Materials	Plastics	3.12E+00	kg	2007	Ecoinvent data V2.2 (2010)	Global
polymethyl methacrylate, beads, at plant	Materials	Plastics	7.13E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polymethyl methacrylate, sheet, at plant	Materials	Plastics	8.40E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polyols, at plant	Materials	Plastics	3.68E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polyphenylene sulfide, at plant	Materials	Plastics	5.56E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
polypropylene, granulate, at plant	Materials	Plastics	1.98E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polystyrene scrap, old, at plant	Materials	Plastics	1.95E-03	kg	2009	Ecoinvent data V2.2 (2010)	Switzerland
polystyrene, expandable, at plant	Materials	Plastics	3.38E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
polystyrene, general purpose, GPPS, at plant	Materials	Plastics	3.51E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
polystyrene, high impact, HIPS, at plant	Materials	Plastics	3.50E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe
polysulphide, sealing compound, at plant	Materials	Plastics	1.53E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
polyurethane, flexible foam, at plant	Materials	Plastics	4.85E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
polyurethane, rigid foam, at plant	Materials	Plastics	4.32E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
polyvinylchloride, at regional storage	Materials	Plastics	2.01E+00	kg	1998	Ecoinvent data V2.2 (2010)	Europe
polyvinylchloride, bulk polymerised, at plant	Materials	Plastics	1.99E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polyvinylchloride, emulsion polymerised, at plant	Materials	Plastics	2.51E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polyvinylchloride, suspension polymerised, at plant	Materials	Plastics	1.91E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
polyvinylidenchloride, granulate, at plant	Materials	Plastics	4.92E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
propylene, at plant	Materials	Plastics	1.44E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
propylene, pipeline system, at plant	Materials	Plastics	1.60E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
purified terephthalic acid, at plant	Materials	Plastics	1.82E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
stretch blow moulding	Materials	Plastics	1.45E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
styrene, at plant	Materials	Plastics	4.48E+00	kg	2002	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
styrene-acrylonitrile copolymer, SAN, at plant	Materials	Plastics	4.06E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
synthetic rubber, at plant	Materials	Plastics	2.66E+00	kg	2003	Ecoinvent data V2.2 (2010)	Europe
thermoforming, with calendering	Materials	Plastics	7.82E-01	kg	1997	Ecoinvent data V2.2 (2010)	Europe
toluene diisocyanate, at plant	Materials	Plastics	6.39E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
vinyl acetate, at plant	Materials	Plastics	2.07E+00	kg	2000	Ecoinvent data V2.2 (2010)	Europe
vinyl chloride, at plant	Materials	Plastics	1.60E+00	kg	2001	Ecoinvent data V2.2 (2010)	Europe
textile refinement, cotton	Materials	Textiles	5.14E+00	kg	1999	Ecoinvent data V2.2 (2010)	Global
textile, jute, at plant	Materials	Textiles	3.07E+00	kg	2007	Ecoinvent data V2.2 (2010)	India
textile, kenaf, at plant	Materials	Textiles	3.05E+00	kg	2007	Ecoinvent data V2.2 (2010)	India
textile, woven cotton, at plant	Materials	Textiles	2.71E+01	kg	2007	Ecoinvent data V2.2 (2010)	Global
viscose fibres, at plant	Materials	Textiles	4.80E+00	kg	2007	Ecoinvent data V2.2 (2010)	Global
weeving, bast fibres	Materials	Textiles	4.07E-01	kg	2007	Ecoinvent data V2.2 (2010)	India
weeving, cotton	Materials	Textiles	1.24E+01	kg	1999	Ecoinvent data V2.2 (2010)	Global
yarn production, bast fibres	Materials	Textiles	1.48E+00	kg	2007	Ecoinvent data V2.2 (2010)	India
yarn production, cotton fibres	Materials	Textiles	1.06E+01	kg	1999	Ecoinvent data V2.2 (2010)	Global
yarn, cotton, at plant	Materials	Textiles	1.43E+01	kg	1999	Ecoinvent data V2.2 (2010)	Global
yarn, jute, at plant	Materials	Textiles	2.58E+00	kg	2007	Ecoinvent data V2.2 (2010)	India
yarn, kenaf, at plant	Materials	Textiles	2.56E+00	kg	2007	Ecoinvent data V2.2 (2010)	India
alkylbenzene sulfonate, linear, petrochemical, at plant	Materials	Washing	1.63E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
carboxymethyl cellulose, powder, at plant	Materials	Washing	4.21E+00	kg	1993	Ecoinvent data V2.2 (2010)	Europe
DAS-1, fluorescent whitening agent triazinylaminostilben type, at plant	Materials	Washing	1.09E+01	kg	1997	Ecoinvent data V2.2 (2010)	Europe
esterquat, coconut oil and palm kernel oil, at plant	Materials	Washing	2.31E+00	kg	1998	Ecoinvent data V2.2 (2010)	Europe
esterquat, tallow, at plant	Materials	Washing	1.78E+00	kg	1998	Ecoinvent data V2.2 (2010)	Europe
ethoxylated alcohols (AE11), palm oil, at plant	Materials	Washing	2.50E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
ethoxylated alcohols (AE3), coconut oil, at plant	Materials	Washing	1.83E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
ethoxylated alcohols (AE3), palm kernel oil, at plant	Materials	Washing	3.50E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
ethoxylated alcohols (AE3), petrochemical, at plant	Materials	Washing	2.55E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
ethoxylated alcohols (AE7), coconut oil, at plant	Materials	Washing	1.93E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
ethoxylated alcohols (AE7), palm kernel oil, at plant	Materials	Washing	3.09E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
ethoxylated alcohols (AE7), petrochemical, at plant	Materials	Washing	2.36E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
ethoxylated alcohols, unspecified, at plant	Materials	Washing	2.55E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fatty alcohol sulfate, coconut oil, at plant	Materials	Washing	1.53E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fatty alcohol sulfate, mix, at plant	Materials	Washing	2.42E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fatty alcohol sulfate, palm kernel oil, at plant	Materials	Washing	3.50E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fatty alcohol sulfate, palm oil, at plant	Materials	Washing	2.30E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fatty alcohol sulfate, petrochemical, at plant	Materials	Washing	2.33E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
fluorescent whitening agent distyrylbiphenyl type, at plant	Materials	Washing	2.23E+01	kg	1999	Ecoinvent data V2.2 (2010)	Europe
layered sodium silicate, SKS-6, powder, at plant	Materials	Washing	2.05E+00	kg	1997	Ecoinvent data V2.2 (2010)	Europe
polycarboxylates, 40% active substance, at plant	Materials	Washing	1.14E+00	kg	1998	Ecoinvent data V2.2 (2010)	Europe
soap, at plant	Materials	Washing	1.71E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
sodium metasilicate pentahydrate, 58%, powder, at plant	Materials	Washing	1.25E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
sodium perborate, monohydrate, powder, at plant	Materials	Washing	3.68E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
sodium perborate, tetrahydrate, powder, at plant	Materials	Washing	1.61E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
sodium percarbonate, powder, at plant	Materials	Washing	1.60E+00	kg	1994	Ecoinvent data V2.2 (2010)	Europe
sodium tripolyphosphate, at plant	Materials	Washing	5.89E+00	kg	1994	Ecoinvent data V2.2 (2010)	Europe
steam, for chemical processes, at plant	Materials	Washing	2.34E-01	kg	1995	Ecoinvent data V2.2 (2010)	Europe
zeolite, powder, at plant	Materials	Washing	4.20E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
zeolite, slurry, 50% in H2O, at plant	Materials	Washing	1.90E+00	kg	1995	Ecoinvent data V2.2 (2010)	Europe
tap water, at user, CH	Materials	Water	1.68E-04	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
tap water, at user, Europe	Materials	Water	3.19E-04	kg	2000	Ecoinvent data V2.2 (2010)	Europe
water, completely softened, at plant	Materials	Water	2.45E-05	kg	1993	Ecoinvent data V2.2 (2010)	Europe
water, decarbonised, at plant	Materials	Water	7.80E-06	kg	1993	Ecoinvent data V2.2 (2010)	Europe
water, deionised, at plant	Materials	Water	7.96E-04	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
water, ultrapure, at plant	Materials	Water	6.80E-04	kg	2007	Ecoinvent data V2.2 (2010)	Global
charcoal, at plant	Materials	Wood	1.12E+00	kg	1996	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
industrial residual wood chopping, stationary electric chopper, at plant	Materials	Wood	1.09E-02	kg	2002	Ecoinvent data V2.2 (2010)	Europe
raw cork, at forest road	Materials	Wood	1.96E-02	kg	2003	Ecoinvent data V2.2 (2010)	Europe
wood chopping, mobile chopper, in forest	Materials	Wood	1.39E-02	kg	2002	Ecoinvent data V2.2 (2010)	Europe
wood wool, u=20%, at plant	Materials	Wood	6.22E-02	kg	2002	Ecoinvent data V2.2 (2010)	Europe
operation, aircraft, freight	Transport		1.09E-03	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
operation, aircraft, freight, Europe	Transport		1.66E-03	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
operation, aircraft, freight, intercontinental	Transport		1.06E-03	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
operation, barge	Transport		3.55E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
operation, barge tanker	Transport		3.30E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
operation, coal freight train, diesel	Transport		2.47E-05	kgkm	2004	Ecoinvent data V2.2 (2010)	China
operation, coal freight train, electricity	Transport		3.74E-05	kgkm	2004	Ecoinvent data V2.2 (2010)	China
operation, coal freight train, steam	Transport		1.49E-04	kgkm	2004	Ecoinvent data V2.2 (2010)	China
operation, freight train, AT	Transport		2.98E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	Austria
operation, freight train, BE	Transport		3.80E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	Belgium
operation, freight train, CH	Transport		3.72E-06	kgkm	2007	Ecoinvent data V2.2 (2010)	Switzerland
operation, freight train, DE	Transport		4.63E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	Germany
operation, freight train, diesel	Transport		3.97E-05	kgkm	2003	Ecoinvent data V2.2 (2010)	Europe
operation, freight train, diesel, with particle filter	Transport		4.06E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	Switzerland
operation, freight train, electricity	Transport		2.76E-05	kgkm	2003	Ecoinvent data V2.2 (2010)	Europe
operation, freight train, Europe	Transport		2.92E-05	kgkm	2003	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
operation, freight train, FR	Transport		1.01E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	France
operation, freight train, IT	Transport		3.02E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	Italy
operation, transoceanic freight ship	Transport		9.04E-06	kgkm	2000	Ecoinvent data V2.2 (2010)	Oceanic
operation, transoceanic tanker	Transport		4.64E-06	kgkm	2000	Ecoinvent data V2.2 (2010)	Oceanic
transport, aircraft, freight	Transport		1.10E-03	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
transport, aircraft, freight, Europe	Transport		1.67E-03	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
transport, aircraft, freight, intercontinental	Transport		1.07E-03	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
transport, barge	Transport		4.64E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
transport, barge tanker	Transport		4.30E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
transport, coal freight, rail	Transport		4.45E-05	kgkm	2004	Ecoinvent data V2.2 (2010)	China
transport, crude oil pipeline, offshore, Oceanic	Transport		5.09E-05	kgkm	2002	Ecoinvent data V2.2 (2010)	Oceanic
transport, crude oil pipeline, onshore, Europe	Transport		1.57E-05	kgkm	2002	Ecoinvent data V2.2 (2010)	Europe
transport, freight, rail, AT	Transport		4.02E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	Austria
transport, freight, rail, BE	Transport		4.78E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	Belgium
transport, freight, rail, CH	Transport		1.42E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Switzerland
transport, freight, rail, DE	Transport		5.67E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	Germany
transport, freight, rail, diesel	Transport		5.01E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	United States
transport, freight, rail, diesel, with particle filter	Transport		5.11E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Switzerland
transport, freight, rail, Europe	Transport		3.96E-05	kgk	2000	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
transport, freight, rail, FR	Transport		2.07E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	France
transport, freight, rail, IT	Transport		3.93E-05	kgkm	2007	Ecoinvent data V2.2 (2010)	Italy
transport, liquefied natural gas, freight ship	Transport		2.39E-05	kgkm	1999	Ecoinvent data V2.2 (2010)	Oceanic
transport, lorry >16t, fleet average	Transport		1.34E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry >28t, fleet average	Transport		1.37E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Switzerland
transport, lorry >32t, EURO3	Transport		1.21E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry >32t, EURO4	Transport		1.06E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry >32t, EURO5	Transport		1.07E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry 16-32t, EURO3	Transport		1.85E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry 16-32t, EURO4	Transport		1.66E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry 16-32t, EURO5	Transport		1.68E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry 20-28t, fleet average	Transport		1.95E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Switzerland
transport, lorry 28t, rape methyl ester 100%	Transport		1.39E-04	kgkm	2004	Ecoinvent data V2.2 (2010)	Switzerland
transport, lorry 3.5-16t, fleet average	Transport		2.58E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry 3.5-20t, fleet average	Transport		2.80E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Switzerland
transport, lorry 3.5-7.5t, EURO3	Transport		4.86E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry 3.5-7.5t, EURO4	Transport		4.69E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry 3.5-7.5t, EURO5	Transport		4.74E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
transport, lorry 7.5-16t, EURO3	Transport		2.39E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry 7.5-16t, EURO4	Transport		2.22E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, lorry 7.5-16t, EURO5	Transport		2.25E-04	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
transport, municipal waste collection, lorry 21t	Transport		1.31E-03	kgkm	1996	Ecoinvent data V2.2 (2010)	Switzerland
transport, natural gas, offshore pipeline, long distance, DZ	Transport		5.47E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Algeria
transport, natural gas, offshore pipeline, long distance, NO	Transport		5.57E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Norway
transport, natural gas, onshore pipeline, long distance, DZ	Transport		5.49E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Algeria
transport, natural gas, onshore pipeline, long distance, NO	Transport		5.60E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Norway
transport, natural gas, pipeline, long distance, DE	Transport		5.57E-05	kgkm	2001	Ecoinvent data V2.2 (2010)	Germany
transport, natural gas, pipeline, long distance, Europe	Transport		6.12E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Europe
transport, natural gas, pipeline, long distance, NL	Transport		5.41E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Netherlands
transport, natural gas, pipeline, long distance, RU	Transport		1.28E-04	kgkm	2000	Ecoinvent data V2.2 (2010)	Russian Federation
transport, tractor and trailer	Transport		3.10E-04	kgkm	2002	Ecoinvent data V2.2 (2010)	Switzerland
transport, transoceanic freight ship	Transport		1.08E-05	kgkm	2000	Ecoinvent data V2.2 (2010)	Oceanic
transport, transoceanic tanker	Transport		5.64E-06	kgkm	2000	Ecoinvent data V2.2 (2010)	Oceanic
transport, van <3.5t, CH	Transport		1.54E-03	kgkm	2005	Ecoinvent data V2.2 (2010)	Switzerland
transport, van <3.5t, Europe	Transport		1.92E-03	kgkm	2005	Ecoinvent data V2.2 (2010)	Europe
dismantling, CRT scr , manually, at plant	Waste		6.17E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
dismantling, CRT scr , mechanically, at plant	Waste		6.75E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
dismantling, desktop computer, manually, at plant	Waste		3.96E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
dismantling, desktop computer, mechanically, at plant	Waste		4.13E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global
dismantling, industrial devices, manually, at plant	Waste		2.65E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
dismantling, industrial devices, mechanically, at plant	Waste		3.01E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global
dismantling, IT accessoires, mechanically, at plant	Waste		1.39E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
dismantling, laptop, manually, at plant	Waste		6.71E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
dismantling, laptop, mechanically, at plant	Waste		1.03E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
dismantling, LCD scr , manually, at plant	Waste		1.28E+00	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
dismantling, LCD scr , mechanically, at plant	Waste		1.21E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
dismantling, printer, laser, manually, at plant	Waste		2.04E+00	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
dismantling, printer, laser, mechanically, at plant	Waste		2.05E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
dismantling, shredder fraction from manual dismantling, mechanically, at plant	Waste		1.09E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, aluminium in car shredder residue, 0% water, to municipal incineration	Waste		8.19E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, aluminium, 0% water, to municipal incineration	Waste		3.44E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, aluminium, 0% water, to sanitary landfill	Waste		2.17E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, anion exchange resin f. water, 50% water, to municipal incineration	Waste		1.28E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, antifreezer liquid, 51.8% water, to hazardous waste incineration	Waste		2.76E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, ash from deinking sludge, 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, ash from paper prod. sludge, 0% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, asphalt, 0.1% water, to sanitary landfill	Waste		1.77E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, average incineration residue, 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, basic oxygen furnace wastes, 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, bilge oil, 90% water, to hazardous waste incineration	Waste		2.21E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, biowaste, 60% H2O, to municipal incineration, allocation price	Waste		3.11E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, biowaste, 60% H2O, to municipal incineration, future, alloc. price	Waste		1.50E-02	kg	2010-2020	Ecoinvent data V2.2 (2010)	Switzerland
disposal, bitumen sheet, 1.5% water, to municipal incineration	Waste		2.34E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, bitumen, 1.4% water, to sanitary landfill	Waste		1.14E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building wood, chrome preserved, 20% water, to municipal incineration	Waste		1.22E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, bitumen sheet, to final disposal	Waste		2.34E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, brick, to final disposal	Waste		1.34E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, brick, to recycling	Waste		3.30E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, brick, to sorting plant	Waste		1.34E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, bulk iron (excluding reinforcement), to sorting plant	Waste		3.87E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, cement (in concrete) and mortar, to final disposal	Waste		1.41E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, cement (in concrete) and mortar, to sorting plant	Waste		2.03E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, cement-fibre slab, to final disposal	Waste		1.99E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, cement-fibre slab, to recycling	Waste		3.30E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, concrete gravel, to final disposal	Waste		1.41E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, concrete gravel, to recycling	Waste		4.02E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, building, concrete gravel, to sorting plant	Waste		1.40E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, concrete, not reinforced, to final disposal	Waste		1.41E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, concrete, not reinforced, to recycling	Waste		4.02E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, concrete, not reinforced, to sorting plant	Waste		1.40E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, electric wiring, to final disposal	Waste		1.46E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, emulsion paint on walls, to final disposal	Waste		1.01E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, emulsion paint on walls, to sorting plant	Waste		4.44E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, emulsion paint on wood, to final disposal	Waste		1.13E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, emulsion paint remains, to final disposal	Waste		2.54E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, fibre board, to final disposal	Waste		1.98E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, glass pane (in burnable frame), to final disposal	Waste		2.66E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, glass pane (in burnable frame), to sorting plant	Waste		3.07E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, glass sheet, to final disposal	Waste		1.01E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, glass sheet, to sorting plant	Waste		9.96E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, mineral plaster, to final disposal	Waste		1.01E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, mineral plaster, to sorting plant	Waste		1.64E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, mineral wool, to final disposal	Waste		1.01E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, mineral wool, to sorting plant	Waste		2.57E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, paint on metal, to final disposal	Waste		1.01E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, building, paint on metal, to sorting plant	Waste		4.49E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, paint on walls, to final disposal	Waste		1.01E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, paint on walls, to sorting plant	Waste		8.41E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, paint on wood, to final disposal	Waste		2.38E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, paint remains, to final disposal	Waste		3.56E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, PE sealing sheet, to final disposal	Waste		2.55E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, plaster board, gypsum plaster, to final disposal	Waste		1.34E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, plaster board, gypsum plaster, to recycling	Waste		3.30E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, plaster board, gypsum plaster, to sorting plant	Waste		2.10E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, plaster-cardboard sandwich, to final disposal	Waste		1.34E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, plaster-cardboard sandwich, to recycling	Waste		3.30E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, plaster-cardboard sandwich, to sorting plant	Waste		2.33E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, plastic plaster, to final disposal	Waste		1.01E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, plastic plaster, to sorting plant	Waste		1.92E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, polyethylene/polypropylene products, to final disposal	Waste		3.00E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, polystyrene isolation, flame-retardant, to final disposal	Waste		3.15E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, polyurethane foam, to final disposal	Waste		2.47E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, building, polyurethane sealing, to final disposal	Waste		1.01E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, polyurethane sealing, to sorting plant	Waste		8.49E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, polyvinylchloride products, to final disposal	Waste		2.26E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, PVC sealing sheet, to final disposal	Waste		2.09E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, reinforced concrete, to final disposal	Waste		1.57E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, reinforced concrete, to recycling	Waste		5.63E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, reinforced concrete, to sorting plant	Waste		1.55E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, reinforced plaster board, to final disposal	Waste		1.34E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, reinforced plaster board, to recycling	Waste		3.30E-03	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, reinforced plaster board, to sorting plant	Waste		2.24E-01	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, reinforcement steel, to final disposal	Waste		6.77E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, reinforcement steel, to recycling	Waste		5.76E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, reinforcement steel, to sorting plant	Waste		6.17E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, vapour barrier, flame-retarded, to final disposal	Waste		2.82E+00	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, waste wood, chrome preserved, to final disposal	Waste		1.41E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, building, waste wood, untreated, to final disposal	Waste		1.37E-02	kg	2002	Ecoinvent data V2.2 (2010)	Switzerland
disposal, capacitors, 0% water, to hazardous waste incineration	Waste		2.50E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, carbon SPL, Al elec.lysis, 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, catalyst base CH2O production, 0% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, catalyst base Eth.oxide prod., 0% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, catalyst for EDC production, 0% water, to hazardous waste incineration	Waste		2.43E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, catalyst for EDC production, 0% water, to underground deposit	Waste		1.85E-01	kg	1999	Ecoinvent data V2.2 (2010)	Germany
disposal, catalytic converter for cars, 0% water, to underground deposit	Waste		1.85E-01	kg	1999	Ecoinvent data V2.2 (2010)	Germany
disposal, catalytic converter NOx reduction, 0% water, to underground deposit	Waste		1.85E-01	kg	1999	Ecoinvent data V2.2 (2010)	Germany
disposal, cation exchange resin f. water, 50% water, to municipal incineration	Waste		9.96E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, cement, hydrated, 0% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, cement-fibre slab, 0% water, to municipal incineration	Waste		1.47E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, coatings in CRT scr s, to municipal waste incineration	Waste		3.20E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, concrete, 5% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, copper in car shredder residue, 0% water, to municipal incineration	Waste		7.44E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, copper, 0% water, to municipal incineration	Waste		2.91E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, decarbonising waste, 30% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, digester sludge, to incineration, future, allocation price	Waste		7.92E-03	kg	2010-2020	Ecoinvent data V2.2 (2010)	Switzerland
disposal, digester sludge, to municipal incineration	Waste		1.24E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, drilling waste, 71.5% water, to landfarming	Waste		1.21E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, drilling waste, 71.5% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, dross from Al electrolysis, 0% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, dust, alloyed EAF steel, 15.4% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, dust, unalloyed EAF steel, 15.4% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, electronics for control units	Waste		1.08E+00	kg	2005	Ecoinvent data V2.2 (2010)	Europe
disposal, emulsion paint remains, 0% water, to hazardous waste incineration	Waste		2.53E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, emulsion paint, 0% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, emulsion paint, 0% water, to municipal incineration	Waste		1.13E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, emulsion paint, 0% water, to sanitary landfill	Waste		4.50E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, expanded polystyrene, 5% water, to municipal incineration	Waste		3.15E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, facilities, chemical production	Waste		6.26E-02	kg	2000	Ecoinvent data V2.2 (2010)	Europe
disposal, filter dust Al electrolysis, 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, fluorescent lamps	Waste		8.32E-02	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, frit for CRT tube production, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, glass, 0% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, glass, 0% water, to municipal incineration	Waste		2.47E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, gr liquor dregs, 25% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, gypsum, 19.4% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, gypsum, 19.4% water, to sanitary landfill	Waste		1.34E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, H3PO4 purification residue, 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, hard coal ash from stove, 0% water, to municipal incineration	Waste		2.80E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, hard coal ash from stove, 0% water, to sanitary landfill	Waste		7.38E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, hard coal ash, 0% water, to residual material landfill, AT	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Austria
disposal, hard coal ash, 0% water, to residual material landfill, BE	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Belgium
disposal, hard coal ash, 0% water, to residual material landfill, CZ	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, hard coal ash, 0% water, to residual material landfill, DE	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Germany
disposal, hard coal ash, 0% water, to residual material landfill, ES	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Spain
disposal, hard coal ash, 0% water, to residual material landfill, FR	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	France
disposal, hard coal ash, 0% water, to residual material landfill, HR	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Croatia
disposal, hard coal ash, 0% water, to residual material landfill, IT	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Italy
disposal, hard coal ash, 0% water, to residual material landfill, NL	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Netherlands
disposal, hard coal ash, 0% water, to residual material landfill, PO	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Poland
disposal, hard coal ash, 0% water, to residual material landfill, PT	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Portugal
disposal, hard coal ash, 0% water, to residual material landfill, SK	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Slovakia
disposal, hazardous waste, 0% water, to underground deposit	Waste		1.85E-01	kg	1999	Ecoinvent data V2.2 (2010)	Germany

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, hazardous waste, 25% water, to hazardous waste incineration	Waste		2.43E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, industrial devices, to WEEE treatment	Waste		2.93E-01	kg	2005	Ecoinvent data V2.2 (2010)	Switzerland
disposal, inert material, 0% water, to sanitary landfill	Waste		1.23E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, inert waste, 5% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, LCD module, to municipal waste incineration	Waste		2.49E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, lead in car shredder residue, 0% water, to municipal incineration	Waste		2.10E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, lead smelter slag, 0% water, to residual material landfill	Waste		9.59E-03	kg	2003	Ecoinvent data V2.2 (2010)	Global
disposal, lignite ash from stove, 0% water, to municipal incineration	Waste		3.50E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, lignite ash from stove, 0% water, to sanitary landfill	Waste		7.40E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, Li-ions batteries, hydrometallurgical	Waste		5.15E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, Li-ions batteries, mixed technology	Waste		9.32E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, Li-ions batteries, pyrometallurgical	Waste		1.35E+00	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, limestone residue, 5% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, mineral wool, 0% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, municipal solid waste, 22.9% water, to municipal incineration	Waste		5.05E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, municipal solid waste, 22.9% water, to sanitary landfill	Waste		5.60E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, natural gas pipeline, 0% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, newspaper, 14.7% water, to municipal incineration	Waste		1.77E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, newspaper, 14.7% water, to sanitary landfill	Waste		6.46E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, nickel smelter slag, 0% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, NiMH batteries	Waste		6.42E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, packaging cardboard, 19.6% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, packaging cardboard, 19.6% water, to municipal incineration	Waste		2.52E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, packaging cardboard, 19.6% water, to sanitary landfill	Waste		1.37E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, packaging paper, 13.7% water, to municipal incineration	Waste		2.47E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, packaging paper, 13.7% water, to sanitary landfill	Waste		1.06E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, paint remains, 0% water, to hazardous waste incineration	Waste		3.55E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, paint, 0% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, paint, 0% water, to municipal incineration	Waste		2.38E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, paint, 0% water, to sanitary landfill	Waste		9.17E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, paper, 11.2% water, to municipal incineration	Waste		2.40E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, paper, 11.2% water, to sanitary landfill	Waste		1.06E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, PE sealing sheet, 4% water, to municipal incineration	Waste		2.55E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, plastic plaster, 0% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, plastic plaster, 0% water, to sanitary landfill	Waste		1.54E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, plastic, consumer electronics, 15.3% water, to municipal incineration	Waste		3.03E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, plastic, industr. electronics, 15.3% water, to municipal incineration	Waste		2.98E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:	
disposal, plastics, mixture, 15.3% water, to municipal incineration	Waste			2.35E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, plastics, mixture, 15.3% water, to sanitary landfill	Waste			8.97E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, pollutants from rail ballast, 0% water, to residual material landfill	Waste			3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyethylene terephtalate, 0.2% water, to municipal incineration	Waste			2.03E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyethylene terephtalate, 0.2% water, to sanitary landfill	Waste			8.02E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyethylene, 0.4% water, to municipal incineration	Waste			3.00E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyethylene, 0.4% water, to sanitary landfill	Waste			1.13E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polypropylene, 15.9% water, to municipal incineration	Waste			2.54E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polypropylene, 15.9% water, to sanitary landfill	Waste			9.69E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polystyrene, 0.2% water, to municipal incineration	Waste			3.17E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polystyrene, 0.2% water, to sanitary landfill	Waste			1.18E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyurethane, 0.2% water, to inert material landfill	Waste			7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyurethane, 0.2% water, to municipal incineration	Waste			2.47E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyurethane, 0.2% water, to sanitary landfill	Waste			9.26E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyvinylchloride, 0.2% water, to municipal incineration	Waste			2.26E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyvinylchloride, 0.2% water, to sanitary landfill	Waste			6.60E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, polyvinylfluoride, 0.2% water, to municipal incineration	Waste			2.19E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, PVC sealing sheet, 1.64% water, to municipal incineration	Waste		2.09E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, raw sewage sludge, to municipal incineration	Waste		1.31E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, redmud from bauxite digestion, 0% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, refinery sludge, 89.5% water, to hazardous waste incineration	Waste		2.17E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, refinery sludge, 89.5% water, to landfarming	Waste		1.21E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, refinery sludge, 89.5% water, to sanitary landfill	Waste		6.46E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, refractory SPL, Al elec.lysis, 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residue from cooling tower, 30% water, to sanitary landfill	Waste		1.94E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residue from TiO2 prod. Cl, 56% water, to residual material landfill	Waste		9.61E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residue from TiO2 prod. SO4, 30% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residues Na-dichromate prod., 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residues, mechanical treatment, CRT scr , in MSWI	Waste		2.77E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residues, mechanical treatment, desktop computer, in MSWI	Waste		2.23E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residues, mechanical treatment, industrial device, in MSWI	Waste		2.31E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residues, mechanical treatment, IT accessoires, in MSWI	Waste		2.86E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residues, mechanical treatment, laptop computer, in MSWI	Waste		2.78E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residues, mechanical treatment, laser printer, in MSWI	Waste		2.89E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, residues, mechanical treatment, LCD scr , in MSWI	Waste		2.93E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, residues, shredder fraction from manual dismantling, in MSWI	Waste		2.86E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, rubber, unspecified, 0% water, to municipal incineration	Waste		3.14E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, salt tailings potash mining, 0% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, separator sludge, 90% water, to hazardous waste incineration	Waste		2.13E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, slag from MG silicon production, 0% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, slag, unalloyed electr. steel, 0% water, to residual material landfill	Waste		9.59E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, sludge from FeCl3 production, 30% water, to underground deposit	Waste		6.04E-01	kg	1999	Ecoinvent data V2.2 (2010)	Germany
disposal, sludge from pulp and paper production, 25% water, to sanitary landfill	Waste		9.63E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, sludge from steel rolling, 20% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, sludge, NaCl electrolysis Hg, 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, sludge, NaCl electrolysis, 0% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, sludge, pig iron production, 8.6% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, solvents mixture, 16.5% water, to hazardous waste incineration	Waste		1.98E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, spent activated carbon with mercury, 0% water, to underground deposit	Waste		1.47E-02	kg	1999	Ecoinvent data V2.2 (2010)	Germany
disposal, steel in car shredder residue, 0% water, to municipal incineration	Waste		4.51E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, steel, 0% water, to inert material landfill	Waste		7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:
disposal, steel, 0% water, to municipal incineration	Waste		1.74E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, textiles, soiled, 25% water, to municipal incineration	Waste		1.46E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, tin sheet, 0% water, to municipal incineration	Waste		1.75E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, tin sheet, 0% water, to sanitary landfill	Waste		1.35E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, treatment of batteries	Waste		7.73E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, treatment of cables	Waste		9.29E-01	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, treatment of CRT glass	Waste		8.33E-02	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, treatment of printed wiring boards	Waste		8.83E-02	kg	2005	Ecoinvent data V2.2 (2010)	Global
disposal, used mineral oil, 10% water, to hazardous waste incineration	Waste		2.85E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, vapour barrier, flame-retarded, 4.5% water, to municipal incineration	Waste		2.82E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, waste, Si waferprod., inorg, 9.4% water, to residual material landfill	Waste		3.29E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, waste, silicon wafer production, 0% water, to underground deposit	Waste		8.23E-02	kg	1999	Ecoinvent data V2.2 (2010)	Germany
disposal, wire plastic, 3.55% water, to municipal incineration	Waste		2.35E+00	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, wood ash mixture, pure, 0% water, to landfarming	Waste		1.21E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, wood ash mixture, pure, 0% water, to municipal incineration	Waste		2.25E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, wood ash mixture, pure, 0% water, to sanitary landfill	Waste		1.87E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, wood pole, chrome preserved, 20% water, to municipal incineration	Waste		1.28E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, wood untreated, 20% water, to municipal incineration	Waste		1.18E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
disposal, wood untreated, 20% water, to sanitary landfill	Waste		7.01E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland

Name:	Database section:	Database sub-section:	kg CO_2 eq/unit	Units:	Year:	Source:	Location:	
disposal, zeolite, 5% water, to inert material landfill	Waste			7.13E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
disposal, zinc in car shredder residue, 0% water, to municipal incineration	Waste			2.75E-01	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
process-specific burdens, hazardous waste incineration plant	Waste			1.49E-02	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
process-specific burdens, inert material landfill	Waste			2.62E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
process-specific burdens, municipal waste incineration	Waste			5.29E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
process-specific burdens, residual material landfill	Waste			3.03E-03	kg	2000	Ecoinvent data V2.2 (2010)	Switzerland
process-specific burdens, sanitary landfill	Waste			4.62E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
process-specific burdens, slag compartment	Waste			2.58E-03	kg	1995	Ecoinvent data V2.2 (2010)	Switzerland
shredding, electrical and electronic scrap	Waste			4.34E-02	kg	2005	Ecoinvent data V2.2 (2010)	Global

Appendix 4 – Data quality criteria

A4.1 General about LCA data quality

According to PAS2050, the following data quality requirements should be considered when performing an LCA:

- time related coverage;
- geographical coverage;
- technology coverage;
- precision and accuracy;
- completeness;
- consistency;
- reproducibility; and
- sources of data (primary or secondary).

Thus, data quality assessment is a complex task as multiple aspects need to be considered, including the context in which the data are used. Enough information on the data is therefore fundamental to avoid their misinterpretation or misuse.

A4.2 Data quality assessment in the CCaLC BIOCHEM tool

The quality of data within the CCaLC BIOCHEM tool can be defined by a user as:

- High
- Medium or
- Low.

To help the user determine whether their data are of High, Medium or Low quality, a methodology specific to the CCaLC BIOCHEM tool has been developed using the data quality criteria mentioned in the previous section. The criteria used in the methodology are summarised in Table A4.1. Table A4.2 shows how these can be aggregated to arrive at an overall Data Quality Indicator (DQI) - High, Medium or Low. For these purposes, each data quality criterion is assigned a weight of importance on a scale of 1-10. For example, as shown in Table A4.1, "Age of data" has the weight of 2, being twice as important as the geographical origin of data. Each data quality indicator is assigned (an arbitrary) maximum score for each criterion: e.g. the High indicator has a score of 3, Medium has 2 and Low has a score of 1 (see Table A4.2). Applying the weights of importance for each criterion and its maximum score for the respective quality indicators, the maximum score for each quality indicator is:

- 30 for High;
- 20 for Medium; and
- 10 for Low.

For the purposes of the analysis in the CCaLC BIOCHEM tool , the following score ranges have been adopted for the data quality assessment:

- Low data quality: score in the range of 1-10;
- Medium data quality: score in the range of 11-20; and
- High data quality: score range of 21-30.

An example shown in Table A4.2 shows an overall score of 19, indicating Medium data quality (noting that the overall score for Medium quality is between 11-20).

Table A4.1 Matrix of Data Quality Indicators (DQI) for the CCaLC BIOCHEM tool

Data quality criteria	Data quality indicators		
	High	**Medium**	**Low**
Age of data	< 5 years	5 - 10 years	> 10
Geographical origin of data	Specific	Partly specific	Generic/average
Source of data	Measured and/or modelled based on specific data (e.g. the company data or from suppliers)	Modelled using generic data from LCA databases; some data derived using expert knowledge	Mainly sourced from literature and/or estimated and/or derived using expert knowledge
Completeness of data	All inputs and outputs considered	Majority of relevant inputs and outputs considered	Some relevant inputs and outputs considered or known
Reproducibility /reliability/ consistency of data	Completely reproducible/reliable/ consistent	Partly reproducible/reliable/ consistent	Not reproducible/ not known

Table A4.2 Aggregating individual Data Quality Indicators (DQI) to arrive at an overall DQI (High, Medium or Low)

Data quality criteria	Weighting for each criterion on a scale 1-10*	**High quality** Max. score for each criterion: 3	**Medium quality** Max. score for each criterion: 2	**Low quality** Max. score for each criterion: 1	**Example data quality assessment**
Age	2	3	2	1	1 (Low)
Geographical origin	1	3	2	1	3 (High)
Source	3	3	2	1	2 (Medium)
Completeness	2	3	2	1	3 (High)
Reproducibility /reliability/ consistency	2	3	2	1	1 (Low)
Maximum score		**30 (max score)** Overall score for High in the range: 21-30	**20 (max score)** Overall score for Medium in the range: 11-20	**10 (max score)** Overall score for Low in the range: 1-10	**19** (overall score) **Data quality indicator: Medium**

*The sum of all weights is 10.

NB: The overall score of 19 has been calculated in the following way:
Overall score = 2*1+1*3+3*2+2*3+2*1 = 19
Therefore the overall data quality indicator = Medium

It should be noted that the overall data quality will depend on both the quality of the particular datasets used by the user as well as on the confidence the user places on the quantity/amount of materials, energy etc. they are defining for each sub-system.

For example, the quality of the background dataset for UK electricity mix and the related carbon footprint may be High; however, the user may not be confident in the data related to the amount of electricity used in a particular sub-system so that the quality of this datum may be Medium or Low. In this case, since the data quality for the set is already defined (as high), the user will only need to specify the quality for the quantity/amount and the tool will calculate the overall data quality for that particular sub-system. The process is repeated for each sub-system.

The approach used for calculating DQI for a sub-system is shown in Table A1.3. Note that the quantity/amount is considered more important here than the quality of the dataset.

Table A4.3 Aggregating the Data Quality Indicators (DQI) to arrive at an overall DQI for a each sub-system

DQI for user-defined dataset*	DQI for the amount/quantity entered in the CCaLC tool by the user	Data quality of each sub-system (DQS)
High	High	High (3)
Medium	High	High (3)
Low	High	Medium (2)
High	Medium	Medium (2)
Medium	Medium	Medium (2)
Low	Medium	Medium (2)
High	Low	Medium (2)
Medium	Low	Low (1)
Low	Low	Low (1)

*Note that the datasets already available in the tool have a predefined DQI so that the user only needs to define the quality of their own datasets.

Once the data quality indicators have been calculated for each sub-system, a weighted approach is then applied for assessing the overall data quality of the whole system based on the percentage contribution of each life cycle stage to the total carbon footprint. The overall data quality for the whole system is therefore calculated as:

$$DQ_{CF} = \sum_{n=1}^{N} I_n \left(\sum_{m=1}^{M} DQS_m\right)$$

where:

DQ_{CF} - overall data quality of the system
I_n – percentage contribution of each life cycle stage to the total carbon footprint (%)

DQS_m – data quality (1, 2 or 3) for sub-system *m*

For the purposes of the analysis in the CCaLC BIOCHEM tool , the following ranges have been adopted for the overall data quality of the whole system:

- Low data quality: DQ_{CF} = 100 – 166;
- Medium data quality: DQ_{CF} = 167 - 233; and

High overall data quality: DQ_{CF} = 234 – 300.

Appendix 5 – Water use and water footprint

A5.1 Water use

The water use represents the sum of all the water consumed in a supply chain, comprising blue and green water.

Blue water use refers to consumption of freshwater from rivers, lakes and aquifers. Water consumption indicates the freshwater withdrawals which are evaporated, discharged into different watersheds or the sea after use and embodied in products and waste.

Green water is the amount of rainwater (stored in the soil as soil moisture) used by plants is referred to as green water. Its relevance is significant in the case of agricultural systems.

A5.2 Water footprint (stress-weighted)

The water footprint (stress weighted) is calculated according to the midpoint impact assessment method proposed by Pfister et al. (2009)[1]. This method assesses the environmental impacts of freshwater consumption by incorporating Water Stress Index (WSI) as a mid-point characterisation factor. WSI indicates the water consumption impacts in relation to the water scarcity. This method considers only blue water consumption. Therefore, the water footprint is calculated as below:

Water footprint (m^3 eq./fu) = Blue water use (m^3/fu) x WSI

The CCaLC BIOCHEM tool contains WSI values for all countries at a national level. The WSI values, which range from 0.01 to 1, are derived using the following equation:

$$WSI = \frac{1}{1 + e^{-6.4WTA^{*}\left(\frac{1}{0.01} - 1\right)}}$$

where WTA* is a modified WTA to account for monthly and annual variability of precipitation.

[1] Pfister, S., Koehler, A., Hellweg, S., 2009. Assessing the environmental impacts of freshwater consumption in LCA. Environmental Science & Technology, 43 (11), 4098-4104.