# DRAFT

# PRODUCT ENVIRONMENTAL FOOTPRINT CATEGORY RULES

PEFCR draft

Office Table

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Draft VERSION, rev 1

*Il presente documento include indicazioni metodologiche per la conduzione di uno studio LCA secondo quanto previsto dalla metodologia PEF (Product Environmental Footprint) per la valutazione dell'impronta ambientale di prodotto così come definita nella Raccomandazione 2013/179/UE della Commissione e, ove possibile, dalle Product Environmental Footprint Category Rules Guidance, Version 6.3, May 2018.*

*Il documento, sviluppato nell'ambito del progetto LIFE EFFIGE, è riferito al solo mercato italiano ed è stato redatto in collaborazione con il partner FLA.*

*I suoi contenuti sono un contributo agli studi di settore, ma non sono vincolanti rispetto ad altre iniziative in corso o a venire.*

Life Effige
Environmental Footprint For Improving and Growing Eco-efficiency

## 1. Introduction

The present Product Environmental Footprint Category Rules (PEFCR) is developed within the Life EFFIGE Project, aimed to develop new tools for the implementation of PEF in small and medium-sized businesses, helping them to experiment innovative approaches and methods reduce their environmental footprint and making them more competitive on the current market.

The Product Environmental Footprint (PEF) Guide provides detailed and comprehensive technical guidance on how to conduct a PEF study. PEF studies may be used for a variety of purposes, including in-house management and participation in voluntary or mandatory programmes.

For all requirements not specified in this PEFCR the applicant shall refer to the documents this PEFCR is in conformance with (see chapter 2).

The compliance with the present PEFCR is optional for PEF in-house applications, whilst it is mandatory whenever the results of a PEF study or any of its content is intended to be communicated.

**Terminology: shall, should and may**

This PEFCR uses precise terminology to indicate the requirements, the recommendations and options that could be chosen when a PEF study is conducted.

- The term “shall” is used to indicate what is required in order for a PEF study to be in conformance with this PEFCR.
- The term “should” is used to indicate a recommendation rather than a requirement. Any deviation from a “should” requirement has to be justified when developing the PEF study and made transparent.
- The term “may” is used to indicate an option that is permissible. Whenever options are available, the PEF study shall include adequate argumentation to justify 2. General information about the PEFCR

This PEFCR is valid for products in scope sold in Italy

The PEFCR is written in English.

This PEFCR has been prepared in conformance with the following documents:

- PEFCR “Guidance version 6.3*” excluding all that parts applicable only for products already covered by existing PEFCR. Deviations from the requirements of Guidance v.6.3 have been made based on older versions of the Guidance and expert judgment.*

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- Product Environmental Footprint (PEF) Guide; Annex II to the Recommendation 2013/179/EU, 9 April 2013. Published in the official journal of the European Union Volume 56, 4 May 2013

This PEFCR was developed within the Project EFFIGE –LIFE by the STG Working station guided by partner FLA.

The existing Product Category Rules for the product in scope (Office table) are the following:

| Source | PCR | Product category | Underlying standards and program instructions |
|---|---|---|---|
| **EPD** | UN CPC 3812 & 3814 OTHER FURNITURE USED IN OFFICES AND OTHER FURNITURE N.E.C. | Other furniture used in offices | ISO14040-14044<br>ISO 14025 |

## 2. PEFCR scope

### *2.1 Product classification*

Office furniture production is the result of activities classified in the *Nomenclature Générale des Activités Économiques dans les Communautés Européennes/*Statistical classification of products by activity NACE/CPA Rev.2 under code **31.01 Manufacture of office furniture** and, more specifically,

**31.01.11 Metal furniture of a kind used in office**.

This product category includes the production of office furniture of several materials (excluded some specific ones), including chairs/seats and tables.

### *2.2 Representative product(s)*

The representative product was determined as a virtual product from the weighted average of the office tables sold on the Italian market as indicated by STG and FLA partner.

The product types are the following:

- Operative office desk –fixed height (type C)
- Executive office desk – fixed height (type C)

**Table 1 Representative product**

| Representative Product | Type | % |
|---|---|---|
| **Office table** | Operative office desk –fixed height (type C) | *90%* |
| | Executive office desk – fixed height (type C) | *10%* |

The screening study is available upon request to the STG coordinator that has the responsibility of distributing it with an adequate disclaimer about its limitations.

## *2.3 Functional unit and reference flow*

The functional unit (unit of analysis) is one unit of product, thus **one office table,** as agreed in the EFFIGE office furniture STG.

Table 2 defines the key aspects used to define the FU.

**Table 2 Key aspects of the FU**

| | |
|---|---|
| **What?** | Providing of a working surface solution in office environment |
| **How much?** | 1 unit with working surface 160x80 cm2 supported by table legs… |
| **How long?** | 15 years |
| **How well?** | the office table satisfies the requirements of UNI EN 527-1 and UNI EN 527-2. |

The reference flow is one office table

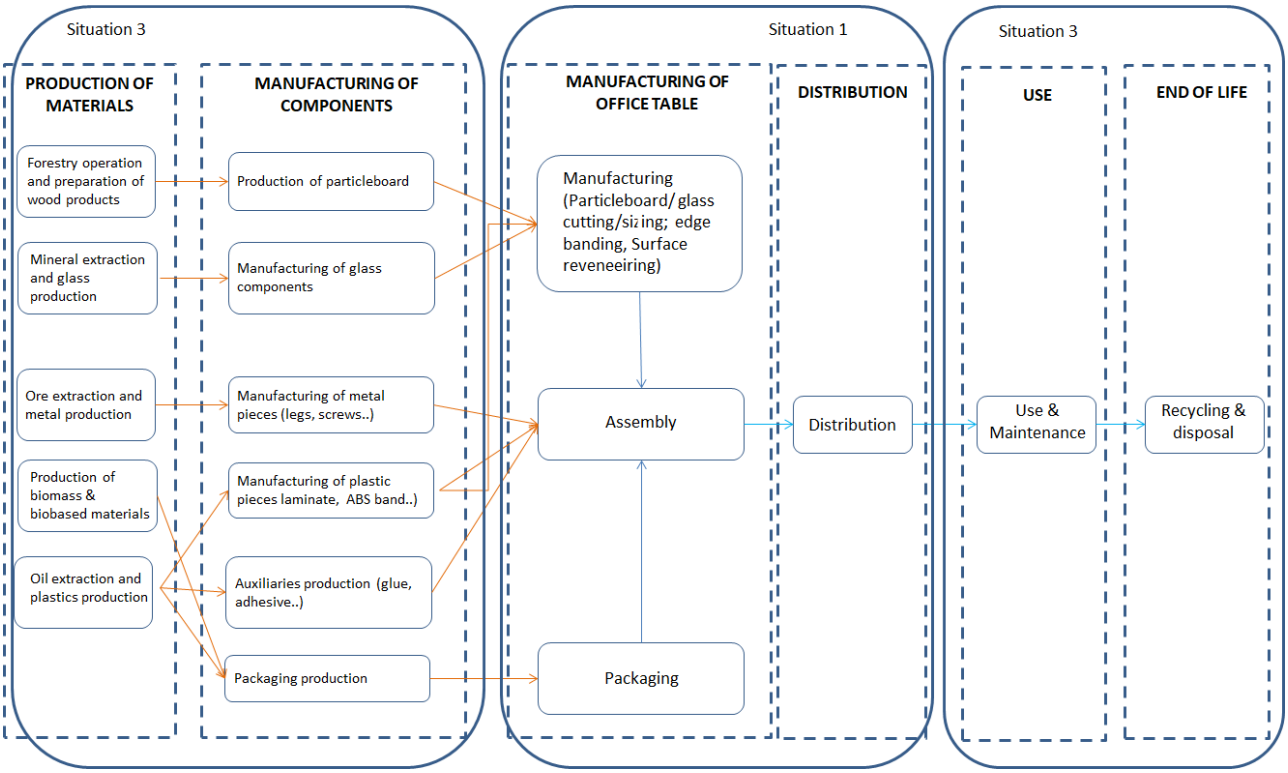
### *2.4 System boundary*

The flow diagram of the entire process includes the following activities (Table 3):

**Table 3. Life cycle stages**

| *Life cycle stage* | *Short description of the processes included* |
|---|---|
| **Manufacturing table components** | Production and supply of raw materials, including:<br>• Plastics (PP, ABS..)<br>• Glass<br>• Wood products<br>• Steel<br>Manufacturing of the components:<br>• Particleboard production<br>• Glass tempering<br>• Steel machining and cutting, bending, powder coating)<br>• Plastics injection moulding<br>• Laminate production<br>Transport to table assembly facility |
| **Manufacturing table packaging** | Production and supply of raw materials, including:<br>• Packaging (PE, Cardboard);<br>Transport to table assembly facility |
| **Manufacturing -table** | • Transformation of wood based particleboards (cutting to measure, lamination of the surface, edge banding and machining) |

| | |
|---|---|
| | • Table top cutting (glass, wood)<br>• Table assembly<br>• Packaging |
| **Distribution** | Transport by lorry<br><br>Transport by ship |
| **Use & maintenance** | Cleaning of the surface (use of tap water) |
| **End of life** | End of life of packaging (cardboard, PE)<br><br>End of life of table |

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Processes in Situation 1 are the processes run by the company applying the PEFCR. Processes in Situation 3 are the ones not run by the company applying the PEFCR and this company does not have access to (company-) specific information.

According to this PEFCR, the following processes may be excluded based on the cut-off rule:

- The production of buildings and equipment. *Relevance of buildings and equipment will be tested during supporting studies.*

### *2.5 EF impact assessment*

Each PEF study carried out in compliance with this PEFCR shall calculate the PEF-profile including all PEF impact categories listed in the table below (ILCD Method 2011 for characterisation, normalisation and weighting factors).

| *Impact category* | *Indicator* | *Unit* | *Recommended default LCIA method* |
|---|---|---|---|
| ***Climate change*** | *Radiative forcing as Global Warming Potential (GWP100)* | *kg $CO_{2\ eq}$* | *Baseline model of 100 years of the IPCC (based on IPCC 2013)* |
| ***- Climate change-biogenic*** | | | |
| ***- Climate change – land use and land transformation*** | | | |
| ***Ozone depletion*** | *Ozone Depletion Potential (ODP)* | *kg CFC-11 $_{eq}$* | *Steady-state ODPs 1999 as in WMO assessment* |
| ***Human toxicity, cancer**** | *Comparative Toxic Unit for humans ($CTU_h$)* | *CTUh* | *USEtox model (Rosenbaum et al, 2008)* |
| ***Human toxicity, non-cancer**** | *Comparative Toxic Unit for humans ($CTU_h$)* | *CTUh* | *USEtox model (Rosenbaum et al, 2008)* |
| ***Particulate matter*** | *Impact on human health* | *kg PM2,5 equivalent* | *UNEP recommended model (Fantke et al 2016)* |
| ***Ionising radiation, human health*** | *Human exposure efficiency relative to $U^{235}$* | *kBq $U^{235}$ $_{eq}$* | *Human health effect model as developed by Dreicer et al. 1995 (Frischknecht et al, 2000)* |
| ***Photochemical ozone formation, human health*** | *Tropospheric ozone concentration increase* | *kg NMVOC $_{eq}$* | *LOTOS-EUROS model (Van Zelm et al, 2008) as implemented in ReCiPe* |
| ***Acidification*** | *Accumulated Exceedance (AE)* | *mol $H^+$ $_{eq}$* | *Accumulated Exceedance (Seppälä et al. 2006, Posch et al, 2008)* |

| *Impact category* | *Indicator* | *Unit* | *Recommended default LCIA method* |
|---|---|---|---|
| ***Eutrophication, terrestrial*** | *Accumulated Exceedance (AE)* | *mol N $_{eq}$* | *Accumulated Exceedance (Seppälä et al. 2006, Posch et al, 2008)* |
| ***Eutrophication, freshwater*** | *Fraction of nutrients reaching freshwater end compartment (P)* | *kg P $_{eq}$* | *EUTREND model (Struijs et al, 2009b) as implemented in ReCiPe* |
| ***Eutrophication, marine*** | *Fraction of nutrients reaching marine end compartment (N)* | *kg N $_{eq}$* | *EUTREND model (Struijs et al, 2009b) as implemented in ReCiPe* |
| ***Ecotoxicity, freshwater***[1] | *Comparative Toxic Unit for ecosystems (CTU$_e$)* | *CTUe* | *USEtox model, (Rosenbaum et al, 2008)* |
| ***Land Use*** | *Soil Organic Matter (SOM)* | *Kg C deficit* | *Mila i Canals et al. 2007* |
| ***Water resource depletion*** | *Freshwater scarcity* | *m$^3$ water $_{eq}$* | *Swiss Ecoscarcity 2006* |
| ***Mineral, fossil & renewable resource depletion*** | ***Scarcity of mineral resource*** | ***kg Sb $_{eq}$*** | *van Oers et al. 2002.* |

### *2.6 Limitations*

The main limitation are:

- The lack of primary data for the production of buildings and equipment.

## 3. Most relevant impact categories, life cycle stages, processes and elementary flows

The most relevant impact categories for the product **RP – Office Table**, in scope of this PEFCR, are the following:

- **Mineral, fossil & ren resource depletion**
- **Particulate matter**
- **Acidification**
- **Climate change, fossil**
- **Photochemical ozone formation.**

[1] Long-term emissions (occurring beyond 100 years) shall be excluded from the toxic impact categories. Toxicity emissions to this sub-compartment have a characterisation factor set to 0 in the EF LCIA (to ensure consistency). If included by the applicant in the LCI modelling, the sub-compartment 'unspecified (long-term)' shall be used

The most relevant life cycle stages for the product group in scope of this PEFCR are the following:

- Manufacturing of office table components
- Manufacturing of office table
- Office Table distribution

The most relevant processes for the product group in scope of this PEFCR are the following (table 4):

**Table 1. List of the most relevant processes**

| Impact category | Processes |
|---|---|
| **Mineral, fossil & ren resource depletion** | Material-table legs (from life cycle stage Manufacturing of table components) |
| | Production-table connection (from life cycle stage Manufacturing of table components) |
| | Production-table legs (from life cycle stage Manufacturing of table components) |
| | Production –levelling device (from life cycle stage Production of table components) |
| | End of life –table (from life cycle stage End of life) |
| **Particulate matter** | Material-table legs (from life cycle stage Manufacturing of table components) |
| | Material-table top (from life cycle stage Manufacturing of table components) |
| | Production -table top (from life cycle stage Manufacturing of table components) |
| | Production-table connection (from life cycle stage Manufacturing of table components) |
| | Production-table legs (from life cycle stage Manufacturing of table components) |
| | Distribution (from life cycle stage distribution) |
| **Acidification** | Material-table legs (from life cycle stage Manufacturing of |

| Impact category | Processes |
|---|---|
| | table components) |
| | Material-table top (from life cycle stage Manufacturing of table components) |
| | Production -table top (from life cycle stage Manufacturing of table components) |
| | Production-table connection (from life cycle stage Manufacturing of table components) |
| | Production-table legs (from life cycle stage Manufacturing of table components) |
| | Assembly (from life cycle stage Manufacturing of office table) |
| **Climate change, fossil** | Material-table legs (from life cycle stage Manufacturing of table components) |
| | Material-table top (from life cycle stage Manufacturing of table components) |
| | Production -table top (from life cycle stage Manufacturing of table components) |
| | Production-table legs (from life cycle stage Manufacturing of table components) |
| | Assembly (from life cycle stage Manufacturing of office table) |
| | Distribution (from life cycle stage distribution) |
| **Photochemical ozone formation** | Material-table legs (from life cycle stage Manufacturing of table components) |
| | Material-table top (from life cycle stage Manufacturing of table components) |
| | Production -table top (from life cycle stage Manufacturing of table components) |
| | Production-table legs (from life cycle stage Manufacturing of |

| Impact category | Processes |
|---|---|
| | table components) |
| | Assembly (from life cycle stage Manufacturing of office table) |
| | Distribution (from life cycle stage distribution) |

## 4. Life cycle inventory

### *4.1 List of mandatory company-specific data*

The following processes shall be modelled using company specific data:

- **Production of particleboard;**
- **Production of table legs**
- **Transformation of wood based particleboards**
- **Assembly –table**
- **Distribution**

*Activity data to be collected will be verified and validated during the PEF supporting studies.*

*Default datasets will be validated during the PEF supporting studies.*

### 4.1.1 Production of particleboard

Particleboard production involves three main steps: wood preparation, board shaping and board finishing.

**Data collection requirements for mandatory process production of particleboard**

| **Requirements for data collection purposes** | | | **Requirements for modelling purposes** | | | | | | | | **Remarks** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Activity data to be collected*** | ***Specific requirements (e.g. frequency, measurement standard, etc)*** | ***Unit of measure*** | ***Default dataset to be used*** | ***Dataset source (i.e. node)*** | ***UUID*** | ***TiR*** | ***TeR*** | ***GR*** | ***P*** | ***DQR*** | |
| Inputs: | | | | | | | | | | | |
| Yearly consumption of Shavings and sawdust (from internal recycling) | 1 year average | Ton/year | Waste wood, post-consumer {GLO}\| market for \| Cut-off, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly consumption of Chips and shavings (from ext recycling) | 1 year average | Ton/year | Waste wood, post-consumer {GLO}\| market for \| Cut-off, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly consumption of Yearly consumption of Virgin wood | 1 year average | Ton/year | Wood chips, wet, measured as dry mass {RoW}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly consumption of UF-resin | 1 year average | Ton/year | Urea formaldehyde resin {GLO}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Yearly consumption of Paraffin | 1 year average | Ton/year | Paraffin {GLO}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly consumption of Ammonium sulphate | 1 year average | Ton/year | Ammonium sulfate, as N {GLO}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly consumption Electricity- wood preparation | 1 year average | kWh/year | Electricity, medium voltage {COUNTRY}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly consumption Electricity-board shaping | 1 year average | kWh/year | Electricity, medium voltage {COUNTRY}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly consumption Electricity- board finishing | 1 year average | kWh/year | Electricity, medium voltage {COUNTRY}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly consumption Heat-board shaping | 1 year average | MJ/year | Heat, district or industrial, other than natural gas {CH}\| heat production, softwood chips from forest, at furnace 300kW \| Alloc Def, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly consumption Heat-wood preparation | 1 year average | MJ/year | Heat, district or industrial, other than natural gas {CH}\| heat production, softwood chips from forest, at furnace 300kW \| Alloc Def, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Outputs: | | | | | | | | | | | |
| Yearly Steam air emissions | 1 year average | kg/year | Water -air | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Yearly formaldehyde emissions | 1 year average | Kg/year | Formaldehyde -air | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly NO emissions, from wood preparation | 1 year average | Kg/year | Nitrogen monoxide | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly NO2 emissions, from wood preparation | 1 year average | Kg/year | Nitrogen dioxide, COUNTRY | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly SO2 emissions, from wood preparation | 1 year average | Kg/year | Sulfur dioxide, COUNTRY | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly CO2 emissions | 1 year average | Kg/year | Carbon dioxide | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |
| Yearly CO emissions, from wood preparation | 1 year average | Kg/year | Carbon monoxide | Ecoinvent | n/a | n/a | n/a | n/a | n/a | n/a | |

**Direct elementary flow collection requirements for mandatory process production of particleboard**

| **Emissions/resources** | **Elementary flow** | **Frequency of measurement** | **Remarks** |
|---|---|---|---|
| Steam, from wood shaping | Vapour | Yearly emission | |
| Formaldehyde, from wood shaping | Formaldehyde | Yearly emission | |
| NO, from wood preparation | Nitrogen monoxide | Yearly emission | |
| NO2, from wood preparation | Nitrogen dioxide, COUNTRY | Yearly emission | |
| SO2, from wood preparation | Sulfur dioxide, COUNTRY | Yearly emission | |
| CO2, from wood preparation | Carbon dioxide | Yearly emission | |
| CO, from wood preparation | Carbon monoxide | Yearly emission | |

### 4.1.2 Production of table legs

Table legs are produced by steel processing, which includes also cutting, bending and powder coating.

**Data collection requirements for mandatory process production of table legs**

| **Requirements for data collection purposes** | | | **Requirements for modelling purposes** | | | | | | | | **Remarks** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Activity data to be collected* | *Specific requirements (e.g. frequency, measurement standard, etc)* | *Unit of measure* | *Default dataset to be used* | *Dataset source (i.e. node)* | *UUID* | *TiR* | *TeR* | *GR* | *P* | *DQR* | |
| Inputs: | | | | | | | | | | | |
| Yearly steel consumption for table legs | 1 year average | Ton/year | Steel, low-alloyed {RER}\| steel production, converter, low-alloyed \| APOS, U | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| Yearly metal working steel-table legs | 1 year average | Ton/year | Metal working, average for steel product manufacturing {RER}\| processing \| APOS, U | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| Yearly consumption Electricity-cutting bending steel | 1 year average | kWh/year | Electricity, medium voltage {COUNTRY}\| market for \| APOS, U | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| Yearly powder coating metal table legs | 1 year average | m2/year | Powder coat, steel {RER}\| powder coating, steel \| APOS, U | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| Outputs: | | | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| … | … | … | … | … | … | … | | | | | |
| | | | | | | | | | | | |

### 4.1.3 Transformation of wood based particleboard

These operations are carried out before the assembly and are aimed to the production of the table top board and of the panel, starting from the particle board, the laminate (or veneer) and the ABS banding. The involved operations are the following: cutting to measure, reveneering of the surface, edge-banding and machining.

**Data collection requirements for mandatory process transformation of wood based particleboard**

| **Requirements for data collection purposes** | | | **Requirements for modelling purposes** | | | | | | | | **Remarks** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Activity data to be collected* | *Specific requirements (e.g. frequency, measurement standard, etc)* | *Unit of measure* | *Default dataset to be used* | *Dataset source (i.e. node)* | *UUID* | *TiR* | *TeR* | *GR* | *P* | *DQR* | |
| **Inputs**: | | | | | | | | | | | |
| Yearly electricity consumption for cutting sizing board | 1 year average | kWh/year | Electricity, medium voltage {*COUNTRY*}\| market for \| APOS, U | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| Yearly electricity consumption for edge banding | 1 year average | kWh/year | Electricity, medium voltage {COUNTRY}\| market for \| APOS, U | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Yearly electricity consumption for machining | 1 year average | kWh/year | Electricity, medium voltage {COUNTRY}\| market for \| APOS, U | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| Glue | 1 year average | Kg/year | Urea formaldehyde resin {GLO}\| market for \| Alloc Def, U | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| Yearly laminate coating | 1 year average | m2/year | Coating, with melamine impregnated paper {RER}\| coating service, melamine impregnated paper, double-sided \| Alloc Rec, U | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| **Outputs**: | | | | | | | | | | | |
| Yearly particulate generation, machining (air emission) | 1 year average | Kg/year | Particulates, < 2.5 um | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| Yearly particulate generation, cutting sizing board (air emission) | 1 year average | Kg/year | Particulates, < 2.5 um | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |

**Direct elementary flow collection requirements for mandatory process transformation of wood based particleboard**

| **Emissions/resources** | **Elementary flow** | **Frequency of measurement** |
|---|---|---|
| Particulate, to air, from machining | Particulates | Yearly emission |
| Particulate, to air, from cutting sizing board | Particulates | Yearly emission |

### 4.1.4 Assembly –table

In this process all the components of the office table provided by the suppliers or from the operations for the wood based board transformation (or glass table top production) are assembled to form the final product.

**Data collection requirements for mandatory process Assembly-table**

| **Requirements for data collection purposes** | | | **Requirements for modelling purposes** | | | | | | | | **Remarks** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Activity data to be collected* | *Specific requirements (e.g. frequency, measurement standard, etc)* | *Unit of measure* | *Default dataset to be used* | *Dataset source (i.e. node)* | *UUID* | *TiR* | *TeR* | *GR* | *P* | *DQR* | |
| Inputs: | | | | | | | | | | | |
| Yearly electricity consumption for Assembly | 1 year average | kWh/year | Electricity, medium voltage {COUNTRY}\| market for \| APOS, U | Ecoinvent | n/a | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| *Other material inputs..* | | | | | | | | | | | |
| Outputs: | | | | | | | | | | | |
| … | … | … | … | … | … | … | | | | | |
| | | | | | | | | | | | |

### 4.1.5 Distribution

The distribution of the product occurs on road by lorry or by seaship .

| ***Process name**** | ***Unit of measurement (output)*** | ***Default dataset*** | ***Dataset source*** | ***~~UUID~~*** | ***Default DQR*** | | | | ***Remarks*** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | *P* | *TiR* | *GR* | *TeR* | |
| *DISTRIBUTION LORRY* | *Kg*km* | *Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U* | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |
| *DISTRIBUTION SHIP* | *Kg*Km* | *Transport, freight, sea, transoceanic ship {GLO}\| market for \| APOS, U* | Ecoinvent | *n/a* | *n/a* | *n/a* | *n/a* | *n/a* | |

### *4.2 List of processes expected to run by the company*

The following processes are expected to be run by the company applying the PEFCR:

- **Transformation of wood based particleboard**
- **Assembly-table**
- **Distribution -table**

The processes description is in chapter 5.1

### *4.3 Data gaps*

Unless primary data on raw materials and consumables production of appropriate quality (as defined in the PEF Recommendation) are made available from producers, to assure an appropriate overall quality of the PEF study and the comparability of the results, default proxies reported in cap. 5.1. have to be used.

### *4.4 Data quality requirements*

This PEFCR does not specify more stringent data quality requirements and additional criteria for the assessment of data quality compared to the ones reported in PEFCR Guidance 6.3.

For data quality requirements, assessment and reporting, see PEFCR Guidance 6.3, Section B.5.4.

### *4.5 Data needs matrix (DNM)*

For the evaluation of all processes required to model the product and outside the list of mandatory company-specific (listed in section 5.1) using the Data Needs Matrix, see PEFCR Guidance 6.3. Section B.5.5.

### 4.6 Allocation rules

If applicable, allocation in finished particleboard production shall be applied as physical allocation among particleboard finished, dust and waste to dust, since the two coproducts are being reused in the particleboard production.

**Table 5. Allocation rules**

| *Process* | *Allocation rule* | *Modelling instructions* |
|---|---|---|
| Finished particleboard production | Physical allocation | The mass of the different outputs shall be used. |

### 4.7 Which datasets to use?

The secondary datasets to be used by the applicant are those listed in this PEFCR. Whenever a dataset needed to calculate the PEF-profile is not among those listed in this PEFCR, then the applicant shall choose between the following options (in hierarchical order)[2]:

- Use an EF-compliant dataset available on one of the following nodes:
  - http://eplca.jrc.ec.europa.eu/EF-node
  - http://lcdn.blonkconsultants.nl
  - http://ecoinvent.lca-data.com
  - http://lcdn-cepe.org
  - https://lcdn.quantis-software.com/PEF/
  - http://lcdn.thinkstep.com/Node
- Use an EF-compliant dataset available in a free or commercial source;
- Use another EF-compliant dataset considered to be a good proxy. In such case this information shall be included in the "limitation" section of the PEF report.
- Use an ILCD-entry level-compliant dataset. In such case this information shall be included in the "data gap" section of the PEF report.

[2] These recommendations shall be taken into account under one of the following conditions: 1) the datasets are included in the Database integrated into the software of LCA; or 2) checked and validated procedures exist for the import of EF-compliant datasets into the structure required by the software; or 3) the EF compliant impact assessment method is available in the LCA software and a PEFCR exists with benchmark; or 4) the EF compliant impact assessment method is available in the LCA software and the PEF of a suppliers exists with the EF compliant environmental profile (characterized results)

## 4.8 Modelling of wastes and recycled content

For modelling of waste and recycled content the Circular Footprint Formula, as described in PEFCR Guidance 6.3, Section B.5.11, shall be applied.

### 4.8.1 Particleboard recycling

| **Particleboard recycling** | | | |
|---|---|---|---|
| | Ev* | Wood chips, wet, measured as dry mass {CH}\| hardwood forestry, mixed species, sustainable forest management \| Alloc Rec, U; | (A-1)*R2*Qs/Qp |
| | Erec_eol | Wood chips, from post-consumer wood, measured as dry mass {CH}\| treatment of waste wood, post-consumer, sorting and shredding \| Alloc Rec, U; | (1-A)*R2 |
| | Ese_elect | Electricity, medium voltage {IT}\| market for \| Alloc Rec, U; | R3*LHV*Xerelec*(-1) |
| | Ese_heat | Heat, central or small-scale, natural gas {RER}\| market group for \| Alloc Rec, U; | R3*LHV*Xer heat*(-1) |
| | E er | Waste wood, untreated {CH}\| treatment of, municipal incineration \| Alloc Rec, U; | R3 |
| | Ed | Waste wood, untreated {CH}\| treatment of waste wood, untreated, sanitary landfill \| Alloc Rec, U | (1-R2-R3) |

| *Parameter* | *Value* | *Source* |
|---|---|---|
| *A* | *0.8* | *Annex C* |
| *R2* | *0.39* | |
| *R3* | *0.214* | |
| *Qs/Qp* | *0.85* | |

### 4.8.2 Aluminium recycling

| **Aluminium recycling** | | | |
|---|---|---|---|
| | Ev* | Aluminium, primary, ingot {UN-EUROPE}\| production \| Alloc Rec, U | (A-1)*R2*Qs/Qp |
| | Erec_eol | Aluminium scrap, post-consumer (waste treatment) {RER}\| treatment of aluminium scrap, post-consumer, by collecting, sorting, cleaning, pressing \| Alloc Def, U | (1-A)*R2 |
| | Ese_elect | Electricity, medium voltage {IT}\| market for \| Alloc Rec, U; | R3*LHV*Xerelec*(-1) |

| | | | |
|---|---|---|---|
| | Ese_heat | Heat, central or small-scale, natural gas {RER}\| market group for \| Alloc Rec, U; | R3*LHV*Xer heat*(-1) |
| | E er | Scrap aluminium (waste treatment) {CH}\| treatment of scrap aluminium, municipal incineration \| Alloc Def, U | R3 |
| | Ed | Waste aluminium {CH}\| treatment of, sanitary landfill \| Alloc Rec, U | (1-R2-R3) |

| *Parameter* | *Value* | *Source* |
|---|---|---|
| *A* | *0.8* | *Annex C* |
| *R2* | *0.39* | |
| *R3* | *0.214* | |
| *Qs/Qp* | *0.85* | |

### 4.8.3 Steel recycling

| **Steel recycling** | | | |
|---|---|---|---|
| | Ev* | Steel, low-alloyed {RoW}\| steel production, electric, low-alloyed \| Alloc Rec, U | (A-1)*R2*Qs/Qp |
| | Erec_eol | Iron scrap, sorted, pressed {RER}\| sorting and pressing of iron scrap \| Alloc Rec, U | (1-A)*R2 |
| | Ese_elect | | R3*LHV*Xerelec*(-1) |
| | Ese_heat | | R3*LHV*Xer heat*(-1) |
| | E er | Scrap steel {CH}\| treatment of,incinerationl \| Alloc Rec, U | R3 |
| | Ed | Scrap steel {CH}\| treatment of, inert material landfill \| Alloc Rec, U | (1-R2-R3) |

| *Parameter* | *Value* | *Source* |
|---|---|---|
| *A* | *0.2* | *Annex C* |
| *R2* | *0.73* | |
| *R3* | *0.0945* | |
| *Qs/Qp* | *1* | |

### 4.8.4 Glass recycling

| **Glass recycling** | | | |
|---|---|---|---|
| | Ev* | | (A-1)*R2*Qs/Qp |
| | Erec_eol | | (1-A)*R2 |
| | Ese_elect | | R3*LHV*Xerelec*(-1) |
| | Ese_heat | | R3*LHV*Xer heat*(-1) |
| | E er | | R3 |
| | Ed | Waste glass {CH}\| treatment of, inert material landfill \| Alloc Def, U | (1-R2-R3) |

| *Parameter* | *Value* | *Source* |
|---|---|---|
| *A* | *0.2* | *Annex C* |
| *R2* | *0.76* | |
| *R3* | *0* | |
| *Qs/Qp* | *1* | |

### *4.8.5 Paper and cardboard packaging recycling*

| **Paper and cardboard packaging** | | | |
|---|---|---|---|
| | Ev* | Paper, woodfree, uncoated {RER}\| market for \| Alloc Rec, U | (A-1)*R2*Qs/Qp |
| | Erec_eol | Graphic paper, 100% recycled {GLO}\| market for \| Alloc Rec, U; | (1-A)*R2 |
| | Ese_elect | Electricity, medium voltage {IT}\| market for \| Alloc Rec, U; | R3*LHV*Xerelec*(-1) |
| | Ese_heat | Heat, central or small-scale, natural gas {Europe without Switzerland}\| market for heat, central or small-scale, natural gas \| Alloc Rec, U; | R3*LHV*Xer heat*(-1) |
| | E er | Waste graphical paper {Europe without Switzerland}\| treatment of waste graphical paper, municipal incineration \| Alloc Rec, U; | R3 |
| | Ed | Waste graphical paper {Europe without Switzerland}\| treatment of waste graphical paper, sanitary landfill \| Alloc Rec, U | (1-R2-R3) |

| *Parameter* | *Value* | *Source* |
|---|---|---|
| *A* | *0.2* | *Annex C* |
| *R2* | *0.73* | |
| *R3* | *0.0945* | |
| *Qs/Qp* | *0.85* | |

### *4.8.6 Plastic packaging recycling*

| **Plastic packaging** | | | |
|---|---|---|---|
| | Ev* | Polyethylene terephthalate, granulate, amorphous {RER}\| production \| Alloc Rec, U | (A-1)*R2*Qs/Qp |
| | Erec_eol | PET (waste treatment) {GLO}\| recycling of PET \| Alloc Def, U_mod; | (1-A)*R2 |
| | Ese_elect | Electricity, medium voltage {IT}\| market for \| Alloc Rec, U; | R3*LHV*Xerelec*(-1) |

| | | | |
|---|---|---|---|
| | Ese_heat | Heat, central or small-scale, natural gas {Europe without Switzerland}\| market for heat, central or small-scale, natural gas \| Alloc Rec, U; | R3*LHV*Xer heat*(-1) |
| | E er | Waste polyethylene {CH}\| treatment of, municipal incineration \| Alloc Rec, U; | R3 |
| | Ed | Waste polyethylene terephtalate {CH}\| treatment of, sanitary landfill \| Alloc Rec, U | (1-R2-R3) |

| *Parameter* | *Value* | *Source* |
|---|---|---|
| *A* | *0.5* | *Annex C* |
| *R2* | *0.31* | |
| *R3* | *0.24* | |
| *Qs/Qp* | *1* | |

## 5. Life cycle stages

*For each process, default datasets will be verified during the PEF supporting studies process. During the PEF supporting studies the availability of data for the amount per FU will be verified. If not available, the default amount per FU will be applied.*

### *5.1 Manufacturing table components*

**Table 6. Raw material acquisition and processing**

| ***Process name*** | ***Unit of measurement (output)*** | ***Default*** | | | | ***UUID*** | ***Default DQR*** | | | | ***Most relevant process [Y/N]*** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ***$R_1$*** | ***Amount per FU*** | ***Dataset*** | ***Database*** | | *P* | *TiR* | *GR* | *TeR* | |
| *ABS edge* | *kg* | | *0.0324* | *Acrylonitrile-butadiene-styrene copolymer {GLO}\| market for \| APOS, U* | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *Injection moulding-edge* | *kg* | | *0.0324* | *Injection moulding {RER}\| processing \| APOS, U* | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *Polypropylene - cable hole cover* | *kg* | | *0.4* | *Polypropylene, granulate {GLO}\| market for \| APOS, U* | Ecoinvent | n/a | n/a | n/a | n/a | n/a | N |
| *Injection moulding - cable hole cover* | *kg* | | *0.4* | Injection moulding {RER}\| processing \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Steel - connection table* | *kg* | | *1.08* | Steel, low-alloyed {RER}\| steel production, converter, low-alloyed \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *Y* |
| *Metal working-steel - connection table* | *kg* | | *1.08* | Metal working, average for steel product manufacturing {RER}\| processing \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *Y* |
| *Zinc coating_mod IT - connection table* | *kg* | | *1.08* | Zinc coat, coils {RER}\| zinc coating, coils \| Alloc Def, U_MOD IT | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *Y* |
| *Nylon -PAM - levelling device* | *kg* | | *0.16* | Nylon 6 {GLO}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | |
| *Injection moulding - levelling device* | kg | | 0.16 | Injection moulding {RER}\| processing \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *Y* |
| *Particleboard finished _ - modesty panel* | *kg* | | *5.04* | Production of particleboard | | | | | | | *N* |
| *Steel - screws levelling* | kg | | 0.16 | Steel, low-alloyed {RER}\| | Ecoinvent | n/a | n/ | n/a | n/a | n/a | *N* |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *device* | | | | steel production, converter, low-alloyed \| APOS, U | | | a | | | | |
| *Metal working-steel -screws levelling device* | kg | | 0.16 | Metal working, average for steel product manufacturing {RER}\| processing \| APOS, U | Ecoinvent | n/a | n / a | n/a | n/a | n/a | *Y* |
| *Zinc coating_mod IT - screws levelling device* | kg | | 0.16 | Zinc coat, coils {RER}\| zinc coating, coils \| Alloc Def, U_MOD IT | Ecoinvent | n/a | n / a | n/a | n/a | n/a | *Y* |
| *Steel - table hardware* | kg | | 0.1 | Steel, low-alloyed {RER}\| steel production, converter, low-alloyed \| APOS, U | Ecoinvent | n/a | n / a | n/a | n/a | n/a | *N* |
| *Metal working-steel - table hardware* | kg | | 0.1 | Metal working, average for steel product manufacturing {RER}\| processing \| APOS, U | Ecoinvent | n/a | n / a | n/a | n/a | n/a | *N* |
| *Zinc coating_mod IT - table hardware* | kg | | 0.1 | Zinc coat, coils {RER}\| zinc coating, coils \| Alloc Def, U_MOD IT | Ecoinvent | n/a | n / a | n/a | n/a | n/a | *N* |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Steel - table legs* | kg | | 16.5 | Steel, low-alloyed {RER}\| steel production, converter, low-alloyed \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *Y* |
| *Metal working-steel - table legs* | *kg* | | *16.5* | Metal working, average for steel product manufacturing {RER}\| processing \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *Y* |
| *Cutting-bending- steel - table legs* | *MJ* | | *33* | Electricity, medium voltage {COUNTRY}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *Y* |
| *Powder coating - table legs* | *m2* | | *2.5* | Powder coat, steel {RER}\| powder coating, steel \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *Y* |
| *Tempered glass* | *kg* | | *4.5* | Flat glass, uncoated {GLO}\| market for \| APOS, U;<br><br>Tempering, flat glass {GLO}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *Particleboard finished _ - table top* | | | *20.16* | Production of particleboa | | | | | | | *Y* |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | rd | | | | | | | |

[Please write in CAPITAL LETTERS the name of those processes expected to be run by the company]

**Table 7. Transport**

| *Process name** | *Unit of measurement (output)* | *Default (per FU)* | | | *Default dataset* | *Data set source* | ~~*UUID*~~ | *Default DQR* | | | | *Most relevant [Y/N]* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *Distance* | *Utilisation ratio** | *Empty return* | | | | *P* | *TiR* | *GR* | *TeR* | |
| *Supply_hardware table* | *Kg*km* | *1000* | | | *Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U* | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *Supply_cable hole* | Kg*km | 1000 | | | Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *Supply_ABS edge* | Kg*km | 1000 | | | Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *Supply_connecting structure* | Kg*km | 300 | | | Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *Supply_table legs* | Kg*km | 300 | | | Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *Supply_levelling device* | Kg*km | 1000 | | | Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Supply_modesty panel* | Kg*km | 300 | | | Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *Supply_table top* | Kg*km | 300 | | | Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |

*The applicant of this PEFCR shall always check the utilisation ratio applied in the default dataset and adapt it accordingly.

## *5.2 Manufacturing of table packaging*

**Table 8. Manufacturing of table packaging**

| ***Process name**** | ***Unit of measurement (output)*** | ***Default*** | | | | ***UUID*** | ***Default DQR*** | | | | ***Most relevant process [Y/N]*** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ***$R_1$*** | ***Amount per FU*** | ***Dataset*** | ***base*** | | *P* | *TiR* | *GR* | *TeR* | |
| *Cardboard - packaging* | *kg* | | *3.5* | *Corrugated board box {GLO}\| market for corrugated board box \| APOS, U* | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |
| *PE film - packaging* | *kg* | | *0.5* | *Packaging film, low density polyethylene {GLO}\| market for \| APOS, U* | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |

**Table 9. Transport of packaging**

| *Process name** | *Unit of measurement (output)* | *Default (per FU)* | | | *Default dataset* | *Dataset source* | *~~UUID~~* | *Default DQR* | | | | *Most relevant [Y/N]* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *Distance* | *Utilisation ratio** | *Empty return* | | | | *P* | *TiR* | *GR* | *TeR* | |
| *Supply_ Packaging table* | Kg*km | 300 | | | Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | *N* |

*The applicant of this PEFCR shall always check the utilisation ratio applied in the default dataset and adapt it accordingly.

## *5.3 Manufacturing of table.*

**Table 10. Office table Manufacturing**

| *Process name** | *Unit of measurement (output)* | *Default* | | | | *UUID* | *Default DQR* | | | | *Most relevant process [Y/N]* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *$R_1$* | *Amount per FU* | *Dataset* | *base* | | *P* | *TiR* | *GR* | *TeR* | |
| *CUTTING SIZING BOARD* | | | | | | | | | | | *N* |
| *EDGE BANDING* | | | | | | | | | | | *N* |
| *MACHINING* | | | | | | | | | | | *N* |
| *ASSEMBLY TABLE* | | | | | | | | | | | *Y* |

These processes are already described in chapter 5.1.

## 5.4 Distribution

**Table 11. Transport**

| Process name* | Unit of measurement (output) | Default (per FU) | | | Default dataset | Dataset source | ~~UUID~~ | Default DQR | | | | Most relevant [Y/N] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Distance | Utilisation ratio* | Empty return | | | | P | TiR | GR | TeR | |
| DISTRIBUTION LORRY | Kg*km | 1000 km | | | Transport, freight, lorry 16-32 metric ton, EURO5 {RER}\| transport, freight, lorry 16-32 metric ton, EURO5 \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | Y |
| DISTRIBUTION SHIP | KG*KM | 10.000 km | | | Transport, freight, sea, transoceanic ship {GLO}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | Y |

*The applicant of this PEFCR shall always check the utilisation ratio applied in the default dataset and adapt it accordingly.

## 5.5 Use & Maintenance

**Table 12. Use and Maintenance**

| Process name* | Unit of measurement (output) | Default | | | | UUID | Default DQR | | | | Most relevant process [Y/N] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $R_1$ | Amount per FU | Dataset | base | | P | TiR | GR | TeR | |
| Maintenance table (cleaning) | l | | 7.5 L | Tap water {Europe without Switzerland}\| market for \| APOS, U | Ecoinvent | n/a | n/a | n/a | n/a | n/a | N |

## 5.6 End of life

**Table 13. End of life**

| Process name* | Unit of measurement (output) | Default | | | | UUID | Default DQR | | | | Most relevant process [Y/N] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $R_1$ | Amount per FU | Dataset | Database | | P | TiR | GR | TeR | |
| End of life table | kg | | 48 | Municipal solid waste {CH}\| treatment of, sanitary landfill \| APOS, U; Particleboard recycling CFF; Steel recycling CFF; Glass recycling CFF | | | | | | | Y |
| End of life packaging paper and cardboard | kg | | 3.5 | 15.01.01 Packaging paper and cardboard – R CFF | | | | | | | N |
| End of life packaging plastics | kg | | 0.5 | 15.01.02Packaging plastics – R CFF | | | | | | | N |

[

These processes are modelled according to the data in chapter 5.8.

# 6. PEF results

## *6.1 Benchmark values*

The results of the PEF screening conducted on the representative product are reported in the following tables:

**Table 14.- Characterised benchmark values for RP –Office table**

| Impact Category | Unit | Total | Production -table components | Production -table packaging | Assembly -table | Distribution | Use and maintenance | End of life |
|---|---|---|---|---|---|---|---|---|
| **Climate change, fossil** | kg CO2 eq | 151,548 | 131,507 | 5,387 | 11,872 | 6,781 | 0,003 | -4,001 |
| **Climate change, biogenic** | kg CO2 eq | 3,810 | 0,931 | 0,045 | 4,808E-02 | 1,387E-03 | 5,357E-06 | 2,784 |
| **Climate change, land use & transf** | kg CO2 eq | 0,147 | 0,117 | 0,033 | 1,384E-02 | 2,735E-03 | 4,158E-06 | -1,953E-02 |
| **Ozone depletion** | kg CFC-11 eq | 1,231E-05 | 9,682E-06 | 3,864E-07 | 1,406E-06 | 1,180E-06 | 2,610E-10 | -3,462E-07 |
| **Human toxicity, non-cancer effects** | CTUh | 5,678E-05 | 3,040E-05 | 9,674E-07 | 5,653E-07 | 6,993E-07 | 1,190E-09 | 2,415E-05 |
| **Human toxicity, cancer effects** | CTUh | 1,933E-05 | 1,231E-05 | 6,926E-08 | 6,453E-08 | 4,732E-08 | 2,851E-10 | 6,844E-06 |
| **Particulate matter** | kg PM2.5 eq | 0,166 | 0,157 | 0,003 | 7,351E-03 | 4,965E-03 | 1,715E-06 | -6,034E-03 |
| **Ionizing radiation HH** | kBq U235 eq | 6,905 | 3,898 | 0,335 | 7,001E-01 | 4,466E-01 | 2,691E-04 | 1,525 |
| **Photochemical ozone formation** | kg NMVOC eq | 0,512 | 0,427 | 0,018 | 2,563E-02 | 5,610E-02 | 7,708E-06 | -1,405E-02 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Acidification** | molc H+ eq | 0,947 | 0,807 | 0,025 | 7,320E-02 | 8,663E-02 | 1,607E-05 | -4,501E-02 |
| **Terrestrial eutrophication** | molc N eq | 2,181 | 1,853 | 0,062 | 1,347E-01 | 2,063E-01 | 2,772E-05 | -7,486E-02 |
| **Freshwater eutrophication** | kg P eq | 1,955E-02 | 1,858E-02 | 2,718E-04 | 4,354E-04 | 1,031E-04 | 2,377E-07 | 1,556E-04 |
| **Marine eutrophication** | kg N eq | 1,615E-01 | 1,282E-01 | 7,204E-03 | 8,476E-03 | 1,849E-02 | 2,316E-06 | -8,858E-04 |
| **Freshwater ecotoxicity** | CTUe | 304,180 | 195,732 | 6,337 | 2,640 | 10,554 | 3,895E-03 | 88,912 |
| **Land use** | kg C deficit | 263,045 | 230,453 | 21,111 | 11,579 | 21,056 | 3,501E-03 | -21,157 |
| **Water resource depletion** | m3 water eq | 2,582E-01 | 1,025E-01 | 2,973E-03 | 1,568E-01 | 1,217E-03 | 1,229E-03 | -6,456E-03 |
| **Mineral, fossil & ren resource depletion** | kg Sb eq | 1,102E-02 | 9,689E-03 | 2,335E-04 | 5,086E-05 | 5,514E-05 | 5,779E-08 | 9,864E-04 |

**Table 15. - Normalised benchmark values for RP Office table**

| Impact Category | Totale | Production -table components | Production -table packaging | Assembly -table | Distribution | Use and maintenance | End of life |
|---|---|---|---|---|---|---|---|
| **Climate change, fossil** | 1,644E-02 | 1,426E-02 | 5,842E-04 | 1,288E-03 | 7,354E-04 | 3,048E-07 | -4,339E-04 |
| **Climate change, biogenic** | 4,133E-04 | 1,010E-04 | 4,934E-06 | 5,215E-06 | 1,504E-07 | 5,810E-10 | 3,020E-04 |
| **Climate change, land use & transf** | 1,593E-05 | 1,264E-05 | 3,615E-06 | 1,501E-06 | 2,966E-07 | 4,510E-10 | -2,118E-06 |
| **Ozone depletion** | 5,698E-04 | 4,482E-04 | 1,789E-05 | 6,507E-05 | 5,461E-05 | 1,208E-08 | -1,603E-05 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Human toxicity, non-cancer effects** | 1,065E-01 | 5,704E-02 | 1,815E-03 | 1,061E-03 | 1,312E-03 | 2,232E-06 | 4,530E-02 |
| **Human toxicity, cancer effects** | 5,239E-01 | 3,336E-01 | 1,877E-03 | 1,749E-03 | 1,282E-03 | 7,728E-06 | 1,855E-01 |
| **Particulate matter** | 4,371E-02 | 4,120E-02 | 8,559E-04 | 1,934E-03 | 1,307E-03 | 4,512E-07 | -1,588E-03 |
| **Ionizing radiation HH** | 6,111E-03 | 3,449E-03 | 2,966E-04 | 6,196E-04 | 3,952E-04 | 2,381E-07 | 1,350E-03 |
| **Photochemical ozone formation** | 1,617E-02 | 1,347E-02 | 5,658E-04 | 8,085E-04 | 1,770E-03 | 2,431E-07 | -4,432E-04 |
| **Acidification** | 2,003E-02 | 1,707E-02 | 5,358E-04 | 1,547E-03 | 1,831E-03 | 3,398E-07 | -9,515E-04 |
| **Terrestrial eutrophication** | 1,239E-02 | 1,053E-02 | 3,516E-04 | 7,656E-04 | 1,172E-03 | 1,575E-07 | -4,253E-04 |
| **Freshwater eutrophication** | 1,321E-02 | 1,256E-02 | 1,836E-04 | 2,942E-04 | 6,969E-05 | 1,606E-07 | 1,052E-04 |
| **Marine eutrophication** | 9,555E-03 | 7,585E-03 | 4,262E-04 | 5,016E-04 | 1,094E-03 | 1,370E-07 | -5,242E-05 |
| **Freshwater ecotoxicity** | 3,480E-02 | 2,239E-02 | 7,251E-04 | 3,021E-04 | 1,208E-03 | 4,457E-07 | 1,017E-02 |
| **Land use** | 3,517E-03 | 3,081E-03 | 2,822E-04 | 1,548E-04 | 2,815E-04 | 4,680E-08 | -2,829E-04 |
| **Water resource depletion** | 3,172E-03 | 1,259E-03 | 3,652E-05 | 1,926E-03 | 1,495E-05 | 1,510E-05 | -7,931E-05 |
| **Mineral, fossil & ren resource depletion** | 1,091E-01 | 9,593E-02 | 2,312E-03 | 5,036E-04 | 5,459E-04 | 5,722E-07 | 9,766E-03 |

### *6.2 PEF profile*

The applicant shall calculate the PEF profile of its product in compliance with all requirements included in this PEFCR. The following information shall be included in the PEF report:

- full life cycle inventory;
- characterised results in absolute values, for all impact categories (including toxicity; as a table);
- normalised and weighted result in absolute values, for all impact categories (including toxicity; as a table);
- the aggregated single score in absolute values

Together with the PEF report, the applicant shall develop an aggregated EF-compliant dataset of its product in scope. This dataset shall be made available on …. The disaggregated version may stay confidential.

### *6.3 Additional environmental information*

*Optional*

### *6.4 Other impact results*

*[This chapter is optional and may only be included in the PEFCR when the TS decides to add one or two toxicity impact categories to the list of most relevant impact categories. In this case, the TS may decide to display here the characterised results from the selected ICs toxicity.]*

## 7. References