

# PRODUCT-CATEGORY RULES (PCR)

for preparing an Environmental Product  
Declaration (EPD) for Product Group

## Seating solution

### NPCR 003 Extended version

## Glossary

### **Declared unit:**

Quantity of a building product for use as a reference unit in an environmental declaration for the full life cycle of the product [ISO 21930: 2004,. ISO 14025, 2006]

### **Functional unit:**

Quantified performance of a product system for use as a reference unit in an life cycle assessment study [ISO 14040:2006 and ISO 14025, 2006]

### **Hazardous waste:**

Waste substances that can pose a hazard to human health or the environment, as defined in to EU Directives 91/689/EEC and 75/442/EEC.

### **Impact category:**

Class representing environmental issues of concern into which LCI results may be assigned [ISO 14044:2006]

### **Life Cycle:**

Consecutive and interlinked stages of a product system, from raw material acquisition or generation of natural resources to the final disposal [ISO 14040:2006]

**Life cycle inventory (LCI):** phase of life cycle assessment involving the compilation and quantification of inputs and outputs for a product throughout the life cycle [ISO 14044: 2006]

### **Life cycle assessment (LCA):**

Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle [ISO 14040:2006]

### **Non-renewable resource:**

Resource that exists in an fixed amount in various places in the earth's crust and that cannot be replenished on a human time scale. [ISO 21930: 2007]

### **Product Category Rules (PCR):**

Set of specific rules, requirements, and guidelines for developing Type III environmental declarations for one or more products categories [ISO 14025, 2006]

### **Renewable resource:**

Resource that is grown naturally replenished or cleansed on a human time scale. [ISO 21930: 2007]

### **System boundary:**

Interface between a product system and the environment or other product systems [ISO14040:2006]

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## 1 GENERAL INFORMATION

The content of this PCR for seating solutions is based on NPCR003, published 2005-10-14, and prepared by Norwegian University of Science and Technology (NTNU), Helland Møbler AS, J.E.Ekornes ASA, Håg AS, Jensen Møbler AS. Contact person is Christofer Skaar. The restructuring of this PCR-document is prepared, in accordance with ISO 14025: 2006, by Annik Magerholm Fet and Christofer Skaar at NTNU.

The content of Chapter 7 on impacts from chemicals is provided by Rikke Jørgensen, Kristin Svendsen and Uno Abrahamsen at NTNU.

## 2 DEFINITION OF PRODUCT CATEGORY GROUP

These Product Category Rules are intended for seating solution, a subcategory of furniture. The rules apply to products that provide the function of seating. Other functions that the product may provide are not considered herein.

This document specifies the requirements for the LCA study and for the format and content of the EPD itself. Recognising the global aspects of the furniture industry, the geographical coverage is global.

The product or range of products will be identified by the number of seating solutions provided and the guaranteed lifetime of the main product(s).

In accordance with the "Requirements for an International EPD scheme", similar products (i.e. products with different textiles, surface treatments, foam type, etc.) can be included in the same declaration, provided that the range of variation within each impact category does not exceed  $\pm 5\%$ . The relevant impact categories are listed in section 5.

## 3 LCA-BASED INFORMATION

The environmental declaration for seating solution shall include information from each of the life cycle stages: "Production", "Use in building", "Disassembling" and "End of life treatment". If information on any of these life cycle stages is missing, this shall be clearly stated in the EPD.

### 3.1 *Definition of functional unit*

The functional unit for the life cycle assessment is one seating solution provided and maintained for a period of 15 years.

The EPD shall provide information for the entire physical product.

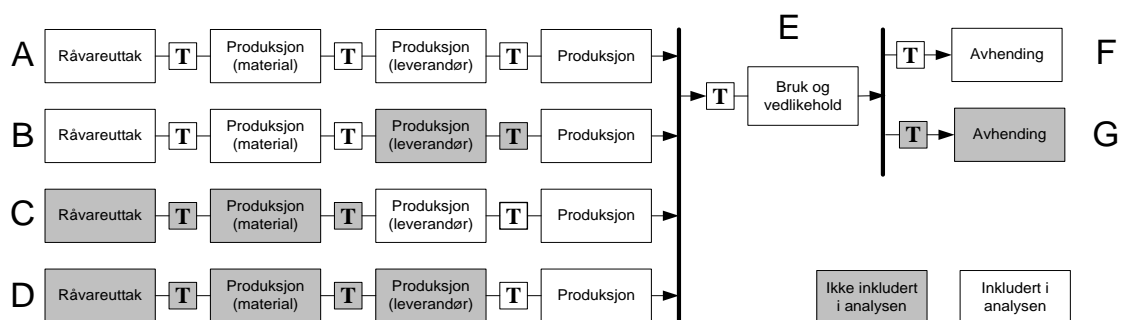
### 3.2 *System boundaries*

The entire life cycle shall be covered. This includes all industrial processes from raw material extraction and production, use and maintenance, dismantling, transportation, and disposal. Rules on how recycling processes should be handled are described in Chapter 4.3 Allocation Rules.

The boundaries towards nature shall describe the flow of material and energy resources from nature into the system and emissions from the system to air and water, and waste.

The boundaries towards other technical systems describe the inflow of material and components from other systems, and the outflow of material to other systems.

The flow chart of the processes for seating solution is illustrated in Figure 1. The system boundaries may appear partly different for the different product types, and must be described or illustrated in the EPD. Figure 1 can be used as a model to illustrate the flow chart for the actual product type.



**Figure 1 – Flow chart of system boundaries.**

If the EPD does not cover the entire life cycle (cradle to grave, shown as units AEF in Figure 1), this shall be clearly stated at the front page of the EPD. Alternative statements for the following system boundaries are:

- AEF: This declaration covers environmental impacts throughout the product life cycle, from raw material extraction to and including product disposal.
- AE: This declaration covers environmental impacts from raw material extraction to use and maintenance. The declaration does not cover product disassembly or disposal, and is therefore not comparable to declarations that cover the entire product life cycle.
- A: This declaration covers environmental impacts from raw material extraction to production. The declaration does not cover use and maintenance or product disposal, and is therefore not comparable to declarations that cover the entire product life cycle.
- D: This declaration is a module environmental product declaration. It covers only the main production process of the product. Raw material extraction and production, use and maintenance, and disposal, are not included.

Building of site, infrastructure and production of manufacturing equipment and personnel activities shall not be included, nor is biological CO<sub>2</sub> consumptions and emissions included within the system boundaries.

### 3.3 Description of data

The environmental background information in this PCR has been prepared based on experiences with a national furniture database [1] and previously performed life cycle assessments of seating solutions [2], [3].

For the supplement of data, specific data should be prioritized. In the absence of other specific data, data from databases can be used as specific data if the following rules are demonstrated:

1. representativeness of the geographical area
2. technological equivalence
3. boundaries towards nature equivalence
4. boundaries towards technical systems equivalence (e.g. allocation rules)

The demonstration of the compliance to these 4 rules shall be clearly described in the technical report from the LCA-study, or in the report on environmental background information. The data sources have to be documented, including the database and the year of publication. This requirement also encompasses sources of data for transport models (including transport form, distances and quantities to be transported), and thermal energy production shall be documented.

The EPD should give information about the databases that are used, and if possible, information about national databases in the country where the components are produced. Appendix 1 gives an overview of relevant databases to be used for generic data.

### **3.4 Criteria for inclusion of inputs and outputs, and data quality requirements**

Input and output data must be gathered based on instructions in Chapter 4.

Inputs or outputs in the use and maintenance phases must be considered. Examples of relevant in- and outputs for use and maintenance are: detergents, water and energy for cleaning (heating water, vacuuming). The life cycle of such items must be addressed (this means that separate LCA-data for such items must be available). The same requirements as described under Chapter 4.1 should be applied here.

### **3.5 Units**

The following units shall be used:

- SI units for both the LCA and the EPD
- Preferred power and energy units:
  - kW for power
  - kWh (MJ) for energy

## **4 INVENTORY ANALYSIS**

### **4.1 List of materials and chemical substances**

The materials and substances listed below must be reported in the environmental product declaration (EPD).

Product specification:

- Material composition, in kg per functional unit and in percentage of total weight.
- Product content of hazardous substances, e.g.:
  - Formaldehyde
  - Brominated flame retardants
  - Heavy metals (specified), e.g. Hg, Pb, Ni, Cr(VI), Cd
- All materials representing 2 per cent or more by weight.
- All materials/substances that are hazardous to health or the environment, allergenic, carcinogenic, mutagenic, toxic to reproduction or dangerous for the environment if present in such a concentration in the product that it meets requirements for being

subject to labelling. The current directives on hazard classification and labelling; 67/548/EEC (Dangerous Substance Directive) and 1999/45/EC (Dangerous Preparation Directive) are replaced by a new Regulation, EC 1272/2008 for Classification, Labelling and Packaging of Substances and Mixtures (CLP), which entered into force in EU in January 2009. CLP is based on UN's recommended Globally Harmonised System of Classification, labelling and Packaging of Substances and Mixtures (known as GHS), which aims to have a worldwide harmonised classification and communication for hazardous chemicals.

#### **4.2 Data collection and calculation procedures**

Information and data to be presented in an EPD shall be based upon an LCA-study or equivalent. Data collection and calculation procedures shall therefore follow instructions given in ISO 14040: 2006 and ISO 14044: 2006.

Data must be collected for inputs and calculated or measured for outputs.

Typical input data are material resources and energy resources. Resources can be classified as natural resources or secondary (alternative/recycled) resources, and sorted as non-renewable and renewable. Resources are further grouped as material resources (e.g. main raw materials, water, fossil fuels in kg) and energy resources (e.g. fossil fuels in MJ/kWh). Resources with mass and energy content, e.g. fossil fuels, will be presented in both groups.

(Raw) Materials

Appendix 2 lists the most relevant materials used in seating solutions.

The quantities (kg) of (raw) materials must be specified.

They are grouped as

- Metals
- Textiles and leather
- Plastics
- Coating
- Wood
- Packaging materials
- Other materials

Energy consumption:

- Energy consumption (specified as renewable or non-renewable) in the different life cycle stages (kWh or MJ). The mix of electricity used in the production process or during the use of the product shall primarily be used. If specific data cannot be obtained, the official mix in the country where the main energy consuming processes take place should be used. The mix of electricity (calculation procedure) shall be documented.

Water/Air:

- Water (m<sup>3</sup>) if used in the production. If water is omitted, this must be justified and documented.

Transport:

- Transport is counted in terms of the capacity (%) of the vehicles (trucks, trains, ships) and the length of the routes travelled (km).

Other incoming materials must be specified separately, see 3.4.

Typical output data are finished products, by-products, wastes (e.g. hazardous and non-hazardous waste) and emissions generated during production processes, during transportation, use and maintenance, and from end-of life treatment of the products. For contribution to environmental impact categories, see chapter 5 and 7.

For simplicity, LCA data tools<sup>1</sup> are recommended to be used in the calculation.

#### 4.3 Cut off criteria

Processes and activities that contribute to more than 1% of the total environmental impact for each impact category must be included in the inventory. Omissions from the inventory must be documented and justified based upon available information.

#### 4.4 Allocation rules

Where possible, allocation should be avoided by dividing unit processes shared with other product systems into two or more sub-processes (as specified in ISO 14044, pp 20-22). If allocation cannot be avoided, the following allocation methods are preferred:

- Multi-input processes: Allocation based on physical relationships (i.e. mass balances).
- Multi-output processes: Allocation based on the economic relationships between the output products.
- Open loop recycling: No allocation should be made for materials subject to recycling. The recycling processes and transport to the manufacture site are included when recycled materials are used as inputs. Outputs subject to recycling are regarded as inputs to the next life cycle. Only the transport to the recycling site shall charge the system when materials are subjected to recycling.

Deviation from these allocation rules must be documented and justified.

## 5 IMPACT CATEGORIES AND CALCULATION PROCEDURES

The EPD shall report on the contribution to the following environmental impact categories listed in Table 1 (see also Chapter 8.2):

**Table 1 Environmental Impact categories**

Impact category	Unit
Climate change ( <i>Global warming potential, GWP</i> )	kg CO <sub>2</sub> equiv
Depletion of the stratospheric ozone layer ( <i>Ozone Depletion Potential, ODP</i> )	kg CFC 11 equiv
Acidification of land and water sources ( <i>Acidification Potential, AP</i> )	kg SO <sub>2</sub> equiv
Eutrophication ( <i>Nutrition Potential, NP</i> )	kg PO <sub>4</sub> equiv
Formation of photochemical oxidants ( <i>Photochemical oxidant creation potential, POCP</i> )	kg C <sub>2</sub> H <sub>4</sub> equiv

<sup>1</sup> Use of GaBi, SimpaPro, Umberto etc.  
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The calculation procedures for the contribution to the impact categories shall follow the instructions given in the ISO 14044 standard, and the results shall be clearly documented in the LCA technical report, or report on environmental background information.

Appendix 1 to this PCR gives an overview of relevant methods and the procedures for the calculation of the contribution to the different environmental impact categories. The contribution to each impact categories shall be given by units listed in table 1.

Waste generation is another impact category, and the waste should be classified into non-hazardous and hazardous waste. The categories of hazardous waste and non-hazardous waste are based upon LCI (life cycle inventory), see clause 3.3 in ISO 14044:2006, including inflows and outflows for each of the product types.

## 6 PARAMETERS IN THE UNDERLYING LCA REPORT

The parameters listed in 4.1, 4.2 and 5 shall be included in the underlying LCA report. This report must also include a complete list of components analyzed in the LCA.

## 7 OTHER INFORMATION (VOLUNTARY)

### 7.1 Chemicals

The specified rules in the previous sections are intended to secure that all relevant environmental impact information will be documented in the EPD. Other information that can be represented on a voluntary basis in the EPD is specifications of materials and substances that can adversely affect human health and the indoor environment in all stages of the life cycle.

A detailed list of components in the product and intermediary chemicals used in the manufacturing process can be included in the product content declaration, including names, identification number and hazard class(es). The content of substances shall be declared by weight %. In cases where information on content could affect patent or business secrets, a qualitative list of chemicals and their expected functions is sufficient, including the hazard classification.

The chemical impact categories are grouped as follows:

- Health impacts in the production stage.
- Environmental impact in the production stage.
- Indoor environment impacts in the use phase.

The method for calculating the health impact and environmental impact and indoor environmental impact are described in Appendix 3.

### 7.2 Recycling declaration

A recycling declaration may include information on aspects that are important for the understanding and appreciation of the recycling properties of the product. The recycling declaration may also include information about the dismantling of products and reuse of materials.

### 7.3 **Other relevant information**

Other relevant information may cover the technology used, manufacturing and assembly locations (if several), fuel origin and use, delivery aspects and other factors such as visual impact and noise. Specific information that is known to be of interest to customers can be included in this section. This can be related to risk, product handling during service and maintenance or how to reduce environmental impact during the use of the product. It is also possible to include information about the product's compliance with environmental information systems such as eco-labelling and information concerning health, safety and ergonomics. Information about the company's fulfilment or breach of laws and prescriptions may also be included.

## 8 CONTENT OF THE ENVIRONMENTAL DECLARATION (EPD)

All Type III environmental declarations in this product category shall follow the format and include the parameters identified in this PCR.

### 8.1 **General information to be declared**

The following general information shall be declared:

- the name and address of the manufacturer(s);
- description of the building product's use and the functional or declared unit of the building product to which the data relates;
- product identification by name (including e.g. production code) and a simple visual representation of the building product to which the EPD is developed;
- the description of the product's use and the functional or declared unit of the product to which the data relates;
- the description of the application (installation) of the windows and doors;
- a general specification for the composition of the products shall be given;
- name of the programme and the programme operator's address and, if relevant the logo and website;
- the PCR identification;
- the date the declaration was issued and period of validity;
- additional environmental information;
- a statement of whether the declaration is complete or modular; (ISO 21930:2007);
- a statement that environmental declarations from different programmes (ISO 14025:2006) may not be comparable;
- a statement that this declaration represents an average performance, in such cases where an EPD declares an average performance for a number of products. In addition the standard deviation of the products' performance with respect to the average is stated;
- the site(s), manufacturer or group of manufacturers or those representing them for whom the results of the LCA are representative;
- information on where explanatory material may be obtained;
- in addition to the above, table 3 shall be completed and reproduced in the Type III environmental declaration;

*Table 3 Demonstration of verification*

PCR review, was conducted by: < name and organization of the chair, and information on how to contact the chair through the programme operator >
Independent verification of the declaration and data, according to ISO 21930:2007 <input type="checkbox"/> internal <input type="checkbox"/> external
(Where appropriate <sup>a</sup> ) Third party verifier: <name of the third party verifier>

a Optional for business to business communication, mandatory for business to consumer communication.

- a diagram of the product's life cycle stages the EPD represents, subdivided into product stages "Raw material production", "Transport", "Production", "Use" and "Disposal";

If the EPD does not cover the entire life cycle this shall be clearly stated on the front page of the EPD. Alternative statements can be:

- This declaration covers environmental impacts throughout the product life cycle, from raw material extraction to product disposal.
- This declaration covers environmental impacts from raw material extraction to use and maintenance. The declaration does not cover product disposal, and is therefore not comparable to declarations that cover the entire product life cycle.
- This declaration covers environmental impacts from raw material extraction to production. The declaration does not cover use and maintenance or product disposal, and is therefore not comparable to declarations that cover the entire product life cycle.
- This declaration is a module environmental product declaration. It covers the main production process of the product. Raw material extraction and production, use and maintenance, and disposal are not included.

## **8.2 Parameters to be declared**

The information to be declared in the EPD must be specified per functional unit.

Parameters to be declared are:

Input data according to Inventory analysis, see Chapter 4.

Depletion of non-renewable energy can be differentiated into:

- Fossil oil
- Natural gas
- Coal
- Uranium

Use of renewable energy can be differentiated into:

- Hydropower
- Wind power/Solar power
- Biomass

Output information presented as contribution to the environmental impact categories presented in Table 1 in Chapter 5 and the largest emissions (by mass) to air and water.

### Wastes:

Non hazardous waste (kg).

Hazardous waste (kg) according to relevant legislation (e.g. EU Directives 91/689/EEC and 75/442/EEC, and national regulations).

Waste streams based on "End of life treatment scenarios"

## 9 REFERENCES

1. Fet, A.M., Skaar, C. and Riddervold, B., 2006. Miljødatabase og miljødeklarasjoner for møbler. Report 1/2006. In Industrial Ecology Programme Report Series, Norges Teknisk Naturvitenskapelige Universitet (NTNU), Trondheim.
2. Dahlsrud, A., Fet, A.M., Emilsen, M., Nielsen, M.W., 2002a. Teknisk rapport for livsløpsanalyse av stolen Mio IV. Working paper IØT 2/02. Institutt for industriell økonomi og teknologiledelse (IØT). Norges Teknisk Naturvitenskapelige Universitet (NTNU). Trondheim.
3. Dahlsrud, A., Fet, A.M., Skjellum, M., 2002b. Teknisk rapport for livsløpsanalyse av stolen Bris., Working Paper IØT 3/02. Institutt for industriell økonomi og teknologiledelse (IØT), Norges Teknisk Naturvitenskapelige Universitet (NTNU). Trondheim.
4. ISO 14025:2006, Environmental labels and declarations, Type III Environmental Declarations
5. ISO 21930 :2007 Building construction – Sustainability in building construction - Environmental declaration of building products
6. ISO 14040:2006 Environmental Management - Life Cycle Assessment - Principles and framework
7. ISO 14044:2006 Environmental Management - Life Cycle Assessment – Requirements and guidelines.
8. ISO 14001:2004 Environmental management system requirements
9. ISO 9001: 2000 Quality management system requirements

Waste treatment:

10. EU directives, 91/689/EEC and 75/442/EE (see also regulation of June 1, 2004 no. 930 of recycling and treatment of waste with amendment by the Ministry of the Environment 2. May 2005 (avfallsforskriften)).
11. RoHS-directive 2002/95/EC - Restriction of Hazardous Substances Directive (RoHS)  
Er dette relevant da det gjelder elektrisk og elektroniske produkter!

Additional national standards and documents to be specified or referred to in the declaration, if relevant:

12. ISPM 15 Internasjonal plantesanitær standard for pakkemateriale
13. BS 476 part 22: Clause 6. Fire test
14. EN 1634-1 Fire test
15. DIN 18273: 1995-09 bzw. 1997-12 Fire test / Certificate
16. EN 61000-6-1, EMC test / conformity
17. EN 61000-6-2, EMC test / conformity
18. EN 61000-6-3, EMC test / conformity
19. EN 61000-6-4, EMC test / conformity

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Norwegian EPD Foundation, PCR Review Panel

*Svein Fossdal*

## Appendix 1: Databases and calculation procedures.

**Table A1-1: Databases for materials**

Material	Database	Published
Steel	IISI (International Iron and Steel Institute) <a href="http://worldsteel.org">http://worldsteel.org</a>	1998 or newer updates
Copper	ICA (International Copper Association)	1998 or newer updates
Copper semi products	ICA (International Copper Association) + IME (Institut für Metallhüttenwesen und Elektrometallurgi, Aachen)	1995 or newer
Electricity	ETH (Eidgenössische Technische Hochschule) data combined with IEA (International Energy Agency) statistics	1998 or newer
Brass	<a href="http://www.brass.org/">http://www.brass.org/</a>	
Aluminium	EAA (European Aluminium Association) <a href="http://www.eaa.org/">http://www.eaa.org/</a>	2005
Plastics	Plastics Europe (Association of Plastics Manufacturers Europe) <a href="http://www.plasticseurope.org/">http://www.plasticseurope.org/</a>	1993-1998 or newer updates
Chemicals	Plastics Europe (Association of Plastics Manufacturers Europe) <a href="http://www.plasticseurope.org/">http://www.plasticseurope.org/</a>	1993-1998 or newer updates
Electronic components	EIME (Environmental Information and Management Explorer) EcoBilan	1998 or newer
-	ELCD (European Reference Life Cycle Data System)	2007 or newer

The EcoInvent LCA-database also include infrastructure, and thereby a more comprehensive database. This database can be used if infrastructure is excluded. Other generic databases can be used if they fulfil the data quality requirements in chapter 3.

**Table A1-2 Information about sources for calculation of contributions to impact categories**

Impact category	Unit	Source for the calculation procedures
Climate change ( <i>Global warming potential (GWP)</i> )	[kg CO <sub>2</sub> equiv]	CML 2001
Depletion of the stratospheric ozone layer) ( <i>Ozone Depletion Potential (ODP)</i> )	[kg CFC 11 equiv]	CML 2001
Acidification of land and water sources ( <i>Acidification Potential (AP)</i> )	[kg SO <sub>2</sub> equiv]	CML 2001
Eutrophication ( <i>Nutrition Potential (NP)</i> )	[kg PO <sub>4</sub> equiv]	CML 2001

Formation of photochemical oxidants ( <i>Photochemical oxidant creation potential (POCP)</i> )	[kg C <sub>2</sub> H <sub>4</sub> equiv]	CML 2001
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## Appendix 2: Materials and substances used in seating.

**Table A2-1: Specification of materials**

<b>Metals</b>	<b>Textiles and leather</b>	<b>Plastics</b>
Steel plate (specify quality) Steel spring (specify quality) Aluminium plate Extruded aluminium	Wool Cotton Man-made fibres (specified) Textile blends (specified) Leather (mineral tanning) Leather (vegetable tanning)	Acrylonitrile butadiene styrene Polycarbonate Polyamide Polymethyl methacrylate Polyacetal ABS Plastic Polystyrene TPD HD polyethylene (HDPE) LD polyethylene (LDPE) Polyurethane (PU) (foam) Latex Polypropylene PVC
<b>Coating</b>	<b>Wood</b>	<b>Packing materials and other materials</b>
Lacquer Powder paint Wet painting	Beech Pine Spruce Fibreboard Laminated wood Tropical timber	Cardboard Paper Expanded polystyrene (EPS) Plastic Adhesives

## Appendix 3: Examples of calculation of health and environmental impacts.

### 1) PRODUCTION PHASE

The health impacts shall be calculated according to Table A3-1.

**Table A3-1: Health impact classes**

Classification	Impacts	Weight(kg) pr Functional unit
Class 1	CMR substances.	
Class 2	Chemicals that: are very toxic, CMR substances group 3, may sensitise by inhalation, danger of very serious irreversible effects or damage breastfeeding children	
Class 3	Chemicals that: are toxic, may sensitise by skin contact, very corrosive, danger of serious damage to health by prolonged exposure.	
Class 4	Harmful, corrosive, danger of cumulative effects, may cause lung damage if swallowed, vapour may cause drowsiness and dizziness.	
Class 5	Irritants	
Class 6	No classified due to health effects	
Total		

The environmental impacts shall be calculated according to Table A3-2.

**Table A3-2: Environmental impact classification**

Classification	Impacts	Weight(kg) pr Functional unit
Class 1	PBT/vPvB.	
Class 2	Very toxic and may cause long term adverse effects	
Class 3	Toxic and may cause long term adverse effects	
Class 4	Harmful and may cause long term adverse effects	
Class 5	Toxic <u>or</u> may cause long term adverse effects	
Class 6	No classified due to environmental effects	
Total		

### 2) USE PHASE

Indoor environmental impacts can be calculated according to one or more impact categories defined by the type 1 environment label.

- Indoor environment impacts.

Based on the recommendation in the PCR for furniture, the indoor environment information for furniture could be based on different schemes. The most relevant was pointed out to be

- M1



- AgBB
- Blue Angel
- Greenguard
- Health impact categories according to the DATSUPI scheme

The case material (a seating solution) is tested according to these five methods and the results are presented in this paper for all five methods/schemes in order to evaluate the methods for use in the EPD-context.

### Results based on M1 – Emission classification of building materials

Criteria	Test after 28 days
TVOC	xx µg/m <sup>2</sup> h
Carcinogenic compounds*	xx µg/m <sup>2</sup> h
Sensory effect	Dissatisfaction with the odeour is below xx %
Formaldehyde	xx µg/m <sup>2</sup> h
Ammonia	xx µg/m <sup>2</sup> h
Casein	xx µg/m <sup>2</sup> h

\* carcinogenic compounds: cat 1 compounds

### Results based on the AgBB scheme

Criteria	Test after 3 days	Test after 28 days
TVOC	xx µg/m <sup>3</sup>	xx µg/m <sup>3</sup>
SVOC	-----	xx µg/m <sup>3</sup>
Carcinogenic Compounds**	xx µg/m <sup>3</sup>	xx µg/m <sup>3</sup>
Risk index	-----	$R = \sum \frac{C_i}{LCI}$
VOC non assessable via LCI	-----	xx µg/m <sup>3</sup>

\*\*carcinogenic compounds: the sum of cat 1 and cat 2 compounds

### Test results based on the Blue Angel scheme

Criteria	Test after 3 days	Test after 28 days
TVOC	-----	xx µg/m <sup>3</sup>
SVOC	-----	xx µg/m <sup>3</sup>
Sum of formaldehyde + acetaldehyde	-----	xx µg/m <sup>3</sup>
Total of other aldehydes	-----	xx µg/m <sup>3</sup>
Carcinogenic compounds**	xx µg/m <sup>3</sup>	-----
Individual carcinogenic compounds***	-----	xx µg/m <sup>3</sup>
Risk index	-----	$R = \sum \frac{C_i}{LCI}$
Not identified VOC	-----	xx µg/m <sup>3</sup>

\*\*carcinogenic compounds: the sum of cat 1 and cat 2 compounds

\*\*\* the concentration of each individual cat 1 and cat 2 compound

### Results based on the Greenguard scheme

Criteria	Test after 7 days
Individual VOC	$\frac{C_i}{TLV_i}$
Formaldehyde	xx ppm
4-phenylcyclohexene	xx µg/m <sup>3</sup>
TVOC	xx µg/m <sup>3</sup>

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Total aldehydes xx ppm

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Health impacts (based on the DATSUPI scheme)

Indicator	Unit	Test af 3 days	Test after 7 days
Indoor Air Quality potential <sup>1</sup>	µg/m <sup>3</sup>		X
Carcinogenic potential <sup>2</sup>	µg/m <sup>3</sup>	X	X
Teratogenic and/or mutagenic potential <sup>3</sup>	µg/m <sup>3</sup>	X	X
Allergenic potential <sup>4</sup>	µg/m <sup>3</sup>		X
Toxicologic potential <sup>5</sup>	-		X

1: sum of TVOC and Aldehydes

2: sum of compounds classified as carcinogenic in cat 1, cat 2 or cat3

3: sum of compounds classified as mutagenic or Teratogenic in cat 1, cat 2 or cat 3

4: sum of compounds classified as allergenic with risk phrase R42 and/or R43

5: risk index according to the AgBB method or the Greenguard method