Product Category Rule
for Environmental Product Declarations

BIFMA PCR for Seating: UNCPC 3811
Version 3

NSF Sustainability℠
National Center for Sustainability Standards

Program Operator
NSF International
National Center for Sustainability Standards
Extended 12 months per PCRext 2023-111, valid through September 30, 2024
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No participation fees were charged by NSF to interested parties. NSF International ensured that reasonable representation among the members of the PCR committee was achieved and potential conflicts of interest were resolved prior to commencing this PCR development.

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BIFMA PRODUCT CATEGORY RULES

These product category rules shall be used in preparing an Environmental Product Declaration (EPD) for *seating products*. In Version 2, Human Health Impact was modified as an optional impact that can be reported in the EPD as stated in section 9.1. In Version 3, the entire PCR was revised to reflect that of the latest PCR language in the BIFMA Storage PCR. In addition, Version 3 was modified as follows: chemical disclosure section wording was revised, comparative assertion language was added, Ozone Depletion Air was added to the environmental impact category list, Table 1 was revised to include an "Other" category which includes all other non-specified material (fiberglass, organics, etc.), the entire PCR was revised throughout to identify when primary versus secondary data is appropriate, Section 7.1 was revised to include additional types and sources of data, and Section 8.2 was revised to include only net fresh water usage and primary energy demand. The expiry of Version 3 has been extended per PCRext 2023-111, valid through September 30, 2024.

ABOUT BUSINESS AND INSTITUTIONAL FURNITURE MANUFACTURERS ASSOCIATION (BIFMA)

BIFMA is the not-for-profit trade association for business and institutional furniture manufacturers. Since 1973, BIFMA has been the voice of the commercial furniture industry. Our industry's service to our customers – providing healthy, comfortable and productive workspaces – rests on an infrastructure of engineering and material standards. These standards, founded on centuries of craft and enhanced by ever-advancing science, embody the best of our knowledge regarding safety, ergonomics, and sustainability.

BIFMA's role is to sponsor the development and refining of current and future standards, educate on their importance and application, and translate their necessary complexity into more easily understood and implemented formats. We also monitor the state of the industry, serve as a forum for member cooperation and collaboration, interact with international counterparts, and advocate for regulatory conditions that foster value and innovation. Visit http://bifma.org or contact email@bifma.org.

ABOUT NSF'S NATIONAL CENTER FOR SUSTAINABILITY STANDARDS (NCSS)

Through the National Center for Sustainability Standards, NSF develops life-cycle based, multi-attribute sustainability standards, protocols, and PCRs for various industries including building products and materials, furniture, carpet and flooring, fabrics, wallcoverings, roofing membranes, green chemicals, electronics, and water and wastewater.

The National Center for Sustainability Standards will continue to add to its growing portfolio while providing education, outreach, and innovation support to private industry, trade associations, government and academia to foster a consensus-based approach toward conformity assessment in the sustainability field. Visit http://www.nsfsustainability.org or contact ncss@nsf.org.

1 GENERAL INFORMATION

This Product Category Rule (PCR) applies to products that provide the function of seating, a subcategory of furniture. Other functions that the product may provide are not considered herein. Utilizing the UN Central Product Classification for this PCR, the Class is 3811 for Seats. This PCR includes the subclasses of 38111 - Seats, primarily with metal frames, 38112 - Seats, primarily with wooden frames, and 38119 - Other seats. This PCR is valid through September 30, 2024, per PCRext 2023-111.

This document specifies the requirements for the Life Cycle Assessment (LCA) study, and the format and content of the EPD itself. The scope of this PCR was based on the availability of information and is North American and European based. Recognizing the global aspects of the furniture industry, global adoption and uniformity of this PCR may be addressed in future revisions as information becomes available. Due to availability, there are some limitations of specificity in the document.

This PCR is based upon the existing PCR issued by Norwegian University of Science and Technology (NTNU), Helland Møbler AS, J.E.Ekornes ASA, Håg AS, Jensen Møbler AS, 2005 and 2008 versions as well as the Environdec UN CPC Class 3811: Seats PCR 2009:02. The development of this PCR was informed by multiple proprietary LCAs and included a change from European based CML impact methodologies to TRACI impact

methodologies. Additionally, concepts around recycled content, end-of-life, and use phase have been further refined and updated to reflect current methodologies.

NSF International (the program operator) and the Business and Institutional Furniture Manufacturers Association Product Category Rules Task group have prepared this PCR document in accordance with ISO 14025. An open enrollment period was provided to seek out stakeholders interested in being part of the PCR creation. A multi-stakeholder group composed of furniture industry personnel, material manufacturers, sustainability consultants, and other experts worked to create the PCR.

The purpose of this PCR is to provide transparent guidance for an organization to conduct an LCA and develop an EPD in an effort to measure progress towards environmental improvements of the organization's products being studied and to communicate environmental information about the product to the public.

This PCR was not written to support comparative assertions between products of different manufacturing organizations. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the variability in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study and the software tool used to conduct the study.

1.1 Goal and scope requirements for the LCA study

The goal of this PCR is to specify the guidelines for developing an ISO 14025 conformant Type III Environmental Product Declaration, based on an ISO 14040 and ISO 14044 conformant LCA. The goal of an LCA that conforms to this PCR shall be, at a minimum, to calculate the environmental impacts of each life cycle phase of the product for select indicators, and shall be presented in such a way as to present the life cycle environmental impacts to the public. The scope of the LCA shall conform to the ISO 14040 series (ISO 14044 Section 4.2.3.1) and be from cradle to grave.

It is recommended that users of this PCR include a statement in their EPD as follows:

> *The PCR this EPD was based on was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs*

or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the source of the data used in the study, and the specifics of the product modeled.

2 PRODUCT DESCRIPTION

The product description shall include the name of the product, product manufacturer and/or model number, a general description of the product and a picture of the product.

Based on results obtained from multiple LCAs, not disclosed to the public, conducted by furniture industry manufacturers, similar products (i.e., products with different textiles, surface treatments, foam type, the same chair with and without arms, etc.) can be included in the same declaration, provided that the range of variation within each impact category does not exceed ± 10% of impact categories listed in *Parameters to be Declared in the EPD*, section 8.

3 FUNCTIONAL UNIT

The functional unit shall be one unit of seating to seat one individual, maintained for a 10 year period.

For chairs with a service life of more than 10 years, the entire impact shall be allocated to the 10 year period (i.e., the reference flow shall be one chair and not a portion of a chair and results shall not be normalized from a fraction of a chair to meet the functional unit).

For chairs with a service life of less than 10 years, a fractional approach may be used (i.e., it will take more than one chair to meet the functional unit requirements. For a chair with a service life of 6 yrs, 1.66 chairs shall be required.)

The ANSI/BIFMA X5.1 method is an agreed upon and approved test methodology to show a chair remains useable for a period of 10 years. Products that have been documented to meet ANSI/BIFMA X5.1 can be deemed to meet the 10 year service life.

If the product does not meet ANSI/BIFMA X5.1, or equivalent, and the warranty period is five years or more, the maximum service life shall be five years. For product warranties less than five years, the service life shall equal the warranty period.

The number of chairs required shall be clearly stated on the front page of the EPD and unit values shall not be less than one.

3.1 Cut-off rules

All known mass and energy flows should be included. Any flows that are knowingly omitted shall be justified and must meet the criteria as follows**.** Any mass and energy flows within the product boundary that consist of less than 1%, may be omitted where justified and documented. Cumulative omitted mass or energy flows shall not exceed 5%.

4 SYSTEM BOUNDARIES

System boundaries are a set of criteria specifying which unit processes are part of a product system. The entire life cycle is to be covered from cradle to grave, including all industrial processes from raw material acquisition and pre-processing, production, product distribution and storage, use and maintenance, and end-of-life management. Rules on how recycling processes should be handled are described in detail in *Allocation Rules*, section 5.

Production of capital goods, infrastructure, and personnel-related activities should not be included. A system boundary example is shown below.

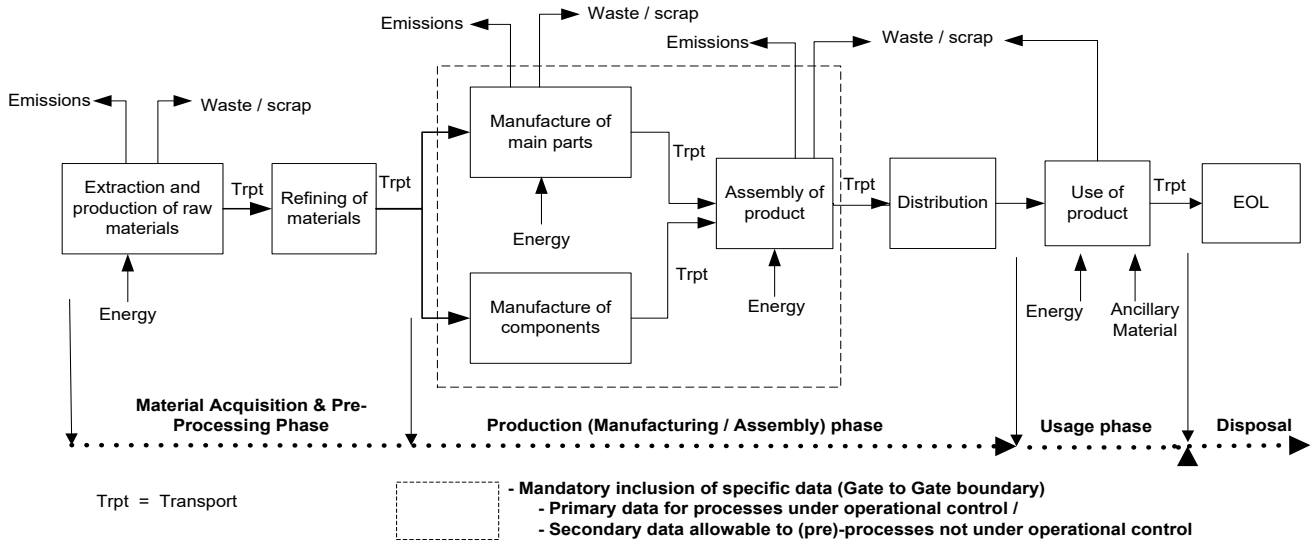

Figure 1: System Boundaries
example flow for illustrative purposes only

4.1 Material acquisition and pre-processing stage

The material acquisition, pre-processing, and intermediate processing stage starts when the material is extracted from nature, and ends when the material in component form reaches the gate of the production facility or service delivery operation. Materials can be considered either “primary” or “secondary”.

- Primary materials are extracted from nature; examples include iron ore, bauxite, wood, etc., that are used to create basic materials used in the production of office furniture (e.g., steel).
- Secondary materials are materials that are recovered, reclaimed, or recycled to create basic materials to be used in the production of office furniture.
- Primary processing is the conversion of resources to materials, to a bulk form or a generic shape (i.e., materials or components that are not necessarily manufactured exclusively for the office furniture industry).
- Intermediate processing is the conversion of resources to materials (e.g., particleboard, plastic pellets, steel coil, etc.).

In practice, many materials can be combinations of both primary and secondary materials. For the material extraction and primary/intermediate processing stage, the boundary ends when the component reaches the gate of the production stage.

Waste and scrap created during raw material acquisition and pre-processing shall be accounted for along with emissions associated with transporting the material to recycling or landfill centers. Primary data for this stage shall be used, if available, otherwise secondary data shall be used. Secondary data shall be used for industry processes, and may come from the USLCI for US based processes, the ELCD database for European based processes, the Japanese LCI Database, or other available data that are representative of geography, time and technology inventory data. If waste materials are recycled, landfilled, combusted, or composted, the transport distances shall be reported in the LCA. In the US, the EPA WARM model gives an average transport end-of-life distance as 32 kilometers (20 miles), This value shall be used for US based processes when primary data or other representative data are not available, and when transport distance is not integrated into the dataset.

All transportation, including interfacility transport, prior to the material being shipped to the production stage, shall be included.

Transportation from the raw material stage to the production stage shall be included. If using an LCA tool where these transportation data are not included, and primary data do not exist, transportation distances listed in Table 1 shall be used for North American-based process transportation of the extracted raw materials within the acquisition and preprocessing. For processes outside of North America, an appropriate regional or national transportation distance and mode(s) shall be used where primary data does not exist. A weighted average transportation distance may also be calculated from primary data. Table 1 below is intended to be used for material transportation associated with the appropriate process flow(s). If more than one transportation was required, then the usage of multiple transportation data sets shall be reflected in the LCA.

Table 1

North American default material transport distances, material acquisition, and pre-processing stage to North American production stage

Raw Material/ Classification grouping		Distance (miles)		
		Rail	Truck*	Water
Veneer	26 Wood Products	162 miles	332 miles	5982 Miles Picking 5 Ports for an average of **all** water transport (Asia, Australia, Africa, Europe & South America)
Particle Board	26 Wood Products	162 miles	332 miles	0 miles (NA due to this mode of transport not being significant for this commodity, to our knowledge)
MDF	26 Wood Products	162 miles	332 miles	0 miles (NA due to this mode of transport not being significant for this commodity, to our knowledge)
Paper Backer	27 Pulp, newsprint, paper, and paperboard	0 miles (NA due to this mode of transport not being significant for this commodity, to our knowledge) [837 miles in 2007 U.S. DOT Shipment Characteristics by SCTG*** Code "Table 7"]	742 miles	0 miles (NA due to this mode of transport not being significant for this commodity, to our knowledge)
Solid Wood	26 Wood Products	162 miles	332 miles	5982 Miles Picking 5 Ports for an average of **all** water transport (Asia, Australia, Africa, Europe & South America)
Plywood	26 Wood Products	162 miles	332 miles	5982 Miles Picking 5 Ports for an average of **all** water transport (Asia, Australia, Africa, Europe & South America)
Plastic (inc. polymer-based materials; exc. textiles)	24 Plastics & Rubber	0 miles (NA due to this mode of transport not being significant for this commodity, to our knowledge)	757 miles in 2007 U.S. DOT Shipment Characteristics by SCTG*** Code Table 13	960 miles in 2007 U.S. DOT Shipment Characteristics by SCTG*** Code Table 7

Raw Material/ Classification grouping		Distance (miles)		
		Rail	Truck*	Water
Raw Material/ Classification grouping		**Distance (miles)**		
		Rail	**Truck***	**Water**
Steel	32 Base metal in prim. or semifin. forms & in finished basic shapes	562 miles in 2007 U.S. DOT Shipment Characteristics by SCTG*** Code Table 7	932 miles	833 miles in 2007 U.S. DOT Shipment Characteristics by SCTG*** Code Table 7
Extruded Aluminum	32 Base metal in prim. or semifin. forms & in finished basic shapes	562 miles in 2007 U.S. DOT Shipment Characteristics by SCTG*** Code Table 7	932 miles	833 miles in 2007 U.S. DOT Shipment Characteristics by SCTG*** Code Table 7
Cast Aluminum	32 Base metal in prim. or semifin. forms & in finished basic shapes	562 miles in 2007 U.S. DOT Shipment Characteristics by SCTG*** Code Table 7	932 miles	833 miles in 2007 U.S. DOT Shipment Characteristics by SCTG*** Code Table 7
Glass	31 Nonmetallic mineral products	0 miles (NA due to this mode of transport not being significant for this commodity, to our knowledge)	126 miles	0 miles (NA due to this mode of transport not being significant for this commodity, to our knowledge)
Fabric Leather	30 Textiles, leather, and articles of textiles or leather	0 miles (NA due to this mode of transport not being significant for this commodity, to our knowledge)	294 miles	5982 Miles Picking 5 Ports for an average of **all** water transport (Asia, Australia, Africa, Europe & South America)
Other	This includes all other non-specified material (fiberglass, organics, etc.)	208 miles**	531 miles**	2,282 miles**

Raw Material/ Classification grouping	Distance (miles)		
	Rail	Truck*	Water

NOTE: The average transport distances could also be used for complete components or units.
NOTE: Oceanic distances were approximated. For materials where a particular mode of transport was not typical or common, it was assumed to be zero. Table 7 and Table 13 referenced from: <http://www.bts.gov/publications/commodity_flow_survey/final_tables_december_2009/pdf/entire.pdf>
Distances taken from the U.S. Department of Transportation's Research and Innovative Technology Administration (RITA) website's "TranStats".
*Truck distance listed in round trip, as the assumption is made that the delivery truck returns empty after making the delivery.
**Distances are based upon the average of all other material categories and shall be used in absence of primary data.
***SCTG refers to Standard Classification Transportable Goods

4.2 Production

The production stage starts with the product components entering the production site and ends with the final product leaving the production gate. This stage is intended to be "gate-to-gate". Gate-to-gate describes the product boundary encompassing the fabrication and assembly of business and institutional furniture. For the purposes of this PCR, the entry gate is the receiving dock of the first facility where basic materials used in the manufacture of the furniture (e.g., steel, particleboard, fabric, laminate, etc.) begin the conversion to furniture components. The end gate is the shipping dock where the ready-to-install furniture will be transported for distribution to the end user. The gate-to-gate will include transportation of intermediate materials and components between facilities where more than one physical location is included in the manufacturing process. Site and gate are used here figuratively, as a product may go though many processes and corresponding intermediate facilities before exiting the production stage as a final product. During production, the product undergoes the transformation from intermediate materials,

to product component, to semi-finished product, to the final product; additionally, any co-products or wastes formed during production shall be considered in this stage. Production includes processes such as:

- Transport of components or semi-finished products between processes and/or facilities;
- The following shall include the materials and energy use along with the transportation to the point of use:
    - Production of the final product by assembling of the components or semi-finished products;
    - Production of the components or semi-finished product(s);
    - Use of ancillary materials during production;
    - Any additional preparation of the final product, including forming, surface treatment, machining and/or other processes, as appropriate; and
    - Materials used in packaging of the final product shall be included.

Waste and scrap created during production shall be included in the LCA model. Commercially available LCA software programs typically embed these flows in the modeling datasets. Primary data shall be used if these are available. If waste materials are recycled, landfilled, combusted, or composted, the transport distances shall follow the current version of the USEPA WARM Model unless primary data are used, currently 20 miles (32 kilometers, USEPA Waste Reduction Model (WARM)[1]).

The amount of waste material sent to landfill versus recycling, shall be based on EPA Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for Durable Goods (current version)[2] within North America, or other appropriate regionally or nationally applicable model for production outside of North America.

Transportation of parts, semi-finished and finished products, to the place of final assembly and/or distribution, shall be included. Intercompany movement of parts, semi-finished and finished products, shall be accounted for where

[1] USEPA Waste Reduction Model (WARM) http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html

[2] Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2008 http://www.epa.gov/epawaste/nonhaz/municipal/msw99.htm

facilities fall under operational control of the reporting company. For facilities not under operational control of the reporting company, intercompany movement of goods should be included.

4.3 Distribution, storage, and use

The product distribution and storage stage starts with the product leaving the gate of the production facility and ends when the consumer takes possession of the product. Several legs of distribution and storage may occur for one product, including storage at a distribution center and a retail location if applicable. Product distribution and storage includes processes such as facility operations and transportation between facilities.

The use stage begins when the consumer takes possession of the product and ends with the used product entering the end-of-life stage. For some products, the use stage does not require energy or generate emissions (e.g., greenhouse gasses); for these products transportation from the storage facility, to the use-location, to the end-of-life location, may be the major processes. Transportation mode and distances shall be based on primary data. Typical processes for distribution and use include:

- Transportation to the use location and during use;
- Storage at the use location;
- Normal use;
- Repair and maintenance occurring during the usage time; and
- Assembly and installation of a product.

4.4 End-of-life stage

The end-of-life stage boundary begins when the used product is ready for disposal, recycling, reuse, etc. and ends when the product is buried, returned to nature (e.g., combustion, deterioration), or diverted to be recycled or reused. Processes that occur as a result of the disposal are also included within the end-of-life stage. End-of-life processes may include:

- Collection of end-of-life products and packaging;
- Dismantling of components from end-of-life products;

- Shredding and sorting;
- Incineration and sorting of bottom ash; and
- Landfilling, landfill maintenance, decomposition emissions.

In the absence of primary data on actual end-of-life treatment for the product, the most current version of the USEPA Municipal Solid Waste (MSW)[2] data shall be used for solid waste treatment percentages. The USEPA WARM model1 shall be used for transportation distances. For products that reach end-of life outside of North America, the practitioner shall use primary data, or justify the usage of other appropriate regional or national model that has an established waste disposal treatment model that documents the percent of each material in the product(s) that can be recycled versus landfilled, in addition to the distances associated with the material(s) travel to end-of-life stage. If neither primary nor justified data sets are available, then North American data shall be used. The amount of each material in the product that can be assumed to be recycled is determined by multiplying the EPA MSW2 within North America, or other appropriate regionally or nationally applicable model recycling rate (in %), by the amount of each homogenous material type that is able to be disassembled. The remaining materials that are not recycled should be modeled for end-of-life using 80% landfill and 20% incineration.

5 ALLOCATION RULES

Allocation procedures shall be uniformly applied to similar inputs and outputs of the system under consideration. If allocation cannot be avoided, users shall follow procedures outlined in ISO 14044-2006 for allocation procedures.

Where possible, allocation should be avoided by dividing unit processes into two or more sub-processes (as specified in ISO 14044, Section 4.3.4, *Allocation*), or through expansion of system boundaries to include the additional functions of co-products. If allocation cannot be avoided, the following hierarchy of allocation methods are preferred:

- Mass, or other biophysical relationship; and
- Economic value

Deviation from these allocation rules shall be documented and justified.

For allocation due to recycling, companies shall use the Recycled Content Method. Allocation procedures for reuse and recycling, as discussed in ISO 14044-2006 (see Section 4.3.4.3), shall be applied for recycling situations. Figure 2 illustrates a simplified process map for a product that uses the recycled content method[3]. The recycled content method is also referred to as the cut–off method, and the 100-0 method.

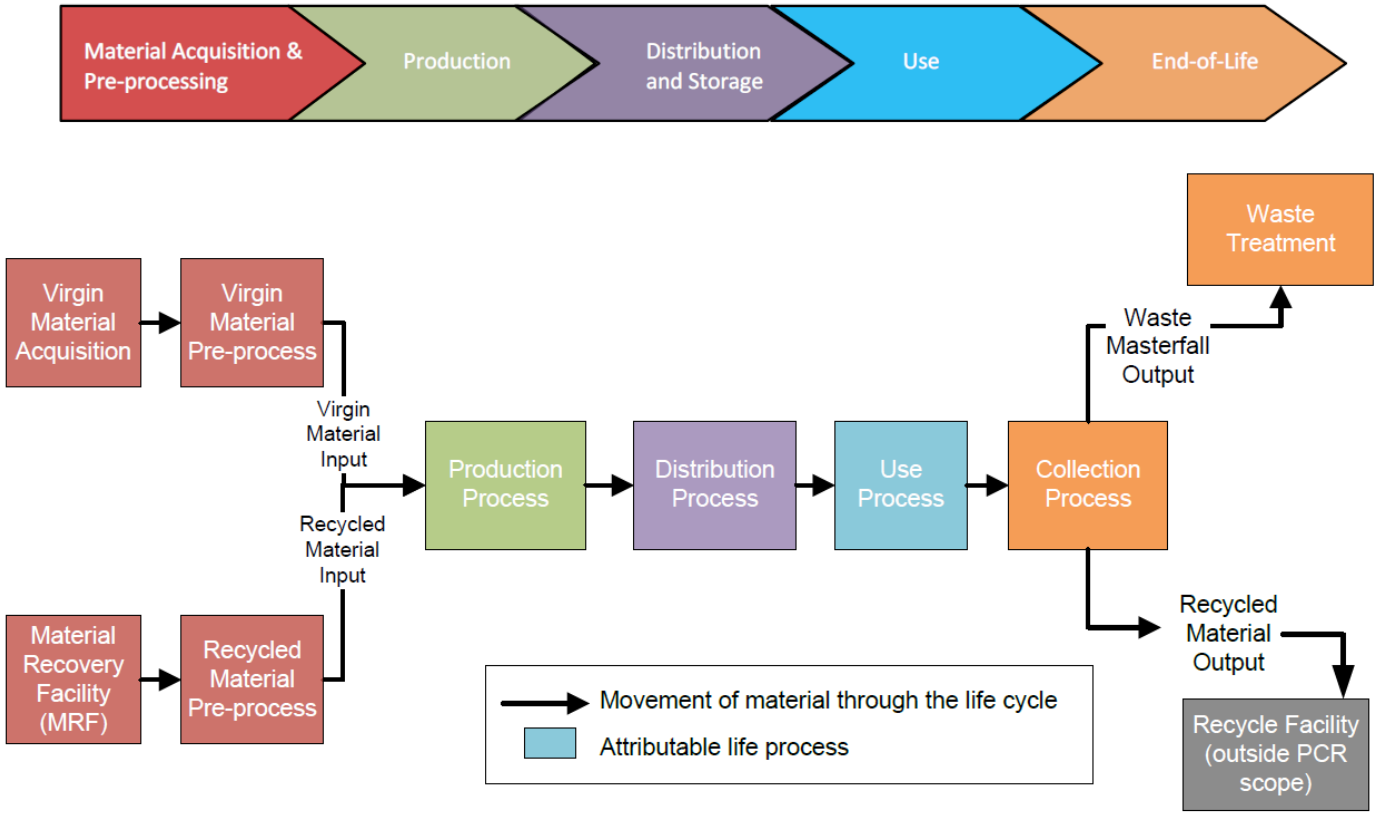

Figure 2: Example Process Map Illustrating the Recycled Material Input Method

6 UNITS AND QUANTITIES

International System of Units (SI units) shall be used for both the LCA and the EPD. Quantities shall be represented with a maximum of 3 significant figures.

7 CALCULATION RULES AND DATA QUALITY REQUIREMENTS

7.1 Types and sources of data

Primary data shall be used for facilities and processes under operational control of the reporting company unless representative industry data are available. The origin of the data should be identified. If a product or component is produced at more than one facility within the operation control of the company, representative data gathered from one facility, or an average, may be used for facility operations that contribute less than 10% of the total product output.

For facilities and processes outside of the operational control of the reporting company, it is recommended that primary data be used for production processes, although secondary data may be used. For products that are manufactured wholly or largely outside of the reporting company control (e.g., contracted products or significant assemblies), primary data are highly encouraged; however, secondary data may be used in lieu of primary data.

Electrical energy data shall use eGRID, or subregions, or similar data to represent electrical energy production for the US. Preference shall be given to datasets that include transmission and distribution losses. Outside the US, the most reasonable and justified processes shall be used for energy production.

Primary data shall be used for unit processes that contribute to the majority of the mass and energy flows, or which have the most relevant environmental emissions (ISO 14044).

7.2 Data quality

A data quality assessment shall be made for the system under study. All data shall be accurate, complete, and

representative of the manufacturing process, current technology and current measurement capability. The data shall be consistent with the following requirements:

1. The primary data obtained from the manufacturing process(es) shall be based upon averages for the year of the study, and documented as such, in addition to the year used for the data.
2. Data should represent the technology and process in current use.
3. Data quality assessment shall conform to ISO 14044, section 4.2.3.6.
4. Data quality assessment shall address the following:
    a) time-related coverage: age of data and the minimum length of time over which data should be collected;
    b) geographical coverage: geographical area from which data for unit processes should be collected to satisfy the goal of the study;
    c) technology coverage: specific technology or technology mix; and
5. Data quality assessments, examples include (but not limited to):
    a) USLCI
    b) ILCD
    c) Table 8.2: Criteria to Evaluate the Data Quality Indicators, WRI product standard[3]
6. Representative data should always be used in the upstream phases (extraction, processing and production). Information from databases may be regarded as representative data, if these fulfill the following requirements:
    a) Representative of the geographical area, i.e., data from the same country, or from areas with the same energy supply mix;
    b) Technological system equivalence;
    c) Boundaries towards nature; and technosphere

If representative data are not available, use of a specific proxy is allowed. The user shall document and justify the decision to use the specified proxy.

[3] WRI Product Life Cycle Accounting and Reporting Standard (second draft - English) October 2011 *Copyright © World Resources Institute & World Business Council for Sustainable Development, September 2011*<http://wri.org>

7.3 Data source

The source of the input data shall be transparent.

7.4 Electricity modeling

Where primary data are available for the electrical power grid for a given unit process, it shall be used to model the electricity source. If data are not available at that level, the next highest aggregation of electrical grid data shall be used, with a preference of local, regional, national, and then multi-national. Carbon offsets or Renewable Energy Credits or Certificates shall not be used in the inventory. These refer to credits purchased for processes not under the control of the purchaser. For example, a coal-fired power plant might buy carbon credits that support the planting of forests, or might buy Renewable Energy Credits that support the installation of renewable energy at distributed locations. On-site renewable energy from solar cells or other renewable energy source may only be included in the inventory if the renewable energy certificates (green power attributes or equivalent) are not transferred to another party. This process avoids the issue of double-counting renewable energy inputs.

NOTE - When using an LCI database that does not account for water use, this shall be noted in the EPD.

7.5 LCIA methodology

The following environmental impact categories shall be disclosed in the EPD, per functional unit. The impact categories shall also be divided up into quantity of each impact category for materials acquisition and refining, production (manufacturing and assembly), distribution and use, and end-of-life.

The following methodologies shall be used regardless of the location of the manufacturer; other methodologies may be reported in addition to the requirements.

- Global warming potential (GWP 100 years) [kg CO_2-eq.] – TRACI 2.1
- Acidification potential (AP) kg SO_2 eq] – TRACI 2.1[4]

[4] USEPA, Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI) http://www.epa.gov/nrmrl/std/sab/traci/

- Photochemical ozone creation potential (POCP, or "Smog") [kg O_3 eq] –TRACI 2.14
- Eutrophication potential (EP) [kg N eq. – TRACI 2.14
- Ozone Depletion Air (kg CFC 11-eq – TRACI 2.1)

7.6 Sensitivity analysis

A sensitivity analysis shall be performed and detailed in the LCA report, suggesting an appropriate model was used.

8 PARAMETERS TO BE DECLARED IN THE EPD

References shall be the most recent version required at the time of the LCA. LCI data and Impact Assessment shall be declared in the EPD as detailed below.

8.1 Materials composition

Product specifications, consisting of material composition of the reference product, in kg per functional unit and in percentage of total weight, shall be reported.

8.2 Life cycle inventory data

Inventory assessment categories shall be reported (e.g., energy and water) in total.

- Net fresh water usage (kg) (The EPD shall indicate if water usage from electricity generation is not included.)
- Primary energy demand in total (renewable and non-renewable energy) (MJ)

8.3 Impact assessment categories

Impact assessment categories shall be reported by life cycle stage and in total. Impact categories shall use the characterization models specified in *LCIA Methodology*, section 7.5.

- Global warming potential
- Acidification potential (total for water and air)
- Photochemical ozone creation potential
- Eutrophication potential (total for water and air)
- Ozone Depletion Air

In addition to disclosure using the TRACI 2.1 indicators, the equivalent indicators from other impact models such as CML or those in the EC Product Environmental Footprint Guide may also be disclosed. Optional LCIA can be reported such as:

- Human Toxicity
- Land Usage
- Ecotoxicity

9 OTHER ENVIRONMENTAL INFORMATION

EPDs developed using this PCR should include, where relevant, additional information related to environmental issues, other than the environmental information derived from LCA, LCI or information modules. This information shall be separated from the information described in ISO 14025, 7.2.2. Identification of the significant environmental aspects should conform to ISO 14025, 7.2.3 and 7.2.4.

10 INDEPENDENT VERIFICATION

All verification of EPD, LCA, LCI and additional environmental information shall conform to ISO 14025, section 8.1.3. The Type III EPD verification shall conform to ISO 14025, section 8.1.4.

Verifiers shall conform to ISO 14025, section 8.2. LCA expertise and conform to program operator instructions.

11 REFERENCES

American Forest and Paper Association. Life Cycle Inventory Analysis: Enhanced Methods and Applications for the Products of the Forest Industry. The International Working Group, 2006.

ANSI/BIFMA e3 Furniture Sustainability Standard

Atherton, John. Declaration by the Metals Industry on Recycling Principles, International Journal of Life Cycle Assessment, 12 (1), 59-60, 2007.

FTC Part 260, Green guides[5]

(ILCD, 2010) Joint Research Commission, 2010, ILCD Handbook: General Guide for Life Cycle Assessment[6]

Intergovernmental Panel on Climate Change (IPCC)[7]

ISO 14025:2006 *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*[8]

ISO 14040:2006 *Environmental management - Life cycle assessment – Principles and framework10*8

ISO 14044:2006 *Environmental management - Life cycle assessment – Requirements and guidelines10*8

EPA, Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI)[4]

USEPA Waste Reduction Model (WARM)1

[5] Federal Trade Commission <http://www.ftc.gov>

[6] <http://lct.jrc.ec.europa.eu>

[7] World Meteorological Organization (secretariat to IPCC), 7bis Avenue de la Paix ,C.P. 2300, CH- 1211 Geneva 2, Switzerland <http://www.ipcc.ch>

[8] International Organization for Standardization (ISO), Case postale 56, CH-1211 Geneve 20, Switzerland <www.iso.org>

World Business Council for Sustainable Development's Global Water Tool

World Resources Institute (WRI) Draft Product Life Cycle Accounting and Reporting Standard3

12 EPD FORMAT

The format of the environmental product declaration should be structured as follows:

A. Front page:
    1. To avoid misinterpretation of results, a company shall include a disclaimer to the audience (reader) identifying the difficulties in comparing results and referring the reader to additional information if needed.

        This EPD was not written to support comparative assertions. EPDs based on different PCRs or different calculation models may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results due to and not limited to the practitioner's assumptions, the source of the data used in the study and the software tool used to conduct the study.
    2. Picture of product
    3. Manufacturer's name and contact information
    4. Information on the EPD program operator
    5. Date of certification and period of validity
        i. Functional unit details aligning to requirements stated in Section 3, including:
            1. 10 year service life, or number of units to meet 10 year service life
            2. Additional Features and functions above and beyond scope of this PCR, reference Section 2.

B. Key environmental parameters:
    1. Global warming potential
    2. Primary energy demand
    3. Percentage of recycled content

C. Product specifications, as described in *Product Description*, section 2

D. Material resources, sorted by:

1. Virgin renewable resources
2. Recycled resources
3. Virgin non-renewable resources

E. Energy consumption:
1. Fossil fuels
2. Nuclear fuels
3. Renewable fuels
4. Miscellaneous fuels (surplus heat, incineration of waste)

F. Impact assessment categories, as specified in *Impact Assessment Categories*, section 8.3

G. Emissions and wastes, as specified in *Parameters to be Declared in the EPD*, section 8

H. Additional environmental information per *Other Environmental Information,* section 9

I. References, as specified in *References*, section 11

12.1 Validity of the EPD

The period of validity shall be reported in the EPD, and shall not exceed a five (5) year period from the date of issuance of the EPD. If changes in any of the environmental impacts are larger than ± 5%, the EPD shall be adjusted. The EPD shall be reviewed and reissued every five years from the date of issuance or earlier, as appropriate.

12.2 References

The EPD shall, if relevant, refer to:

- The underlying LCA report;
- The relevant PCR document;
- Other documents that verify and complement the EPD;
- Instruction for recycling; and
- Program Operator instructions.

THE HOPE OF MANKIND rests in the ability of man to define and seek out the environment which will permit him to live with fellow creatures of the earth, in health, in peace, and in mutual respect.