ENVIRONMENTAL PRODUCT DECLARATION



In accordance with ISO 14025:2016 and BIFMA PCR for Storage UNCPC 3812 for:

Laminate Locker Model B2

0.25m³ of general locker storage

(one locker exceeds the functional unit: one locker is 1.272 functional units or 0.318) Hollman Inc.

HOLLMAN



Program NSF International

https://www.nsf.org/

Program Operator NSF Certification LLC

EPD Registration Number EPD10778

Publication Date 2022-07-29

Valid Until 2027-07-29

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, the specifics of the product modeled, and the software tool used to conduct the study.



PROGRAM INFORMATION

PROGRAM OPERATOR

NSF Certification LLC

789 N. Dixboro, Ann Arbor, MI 48105 www.nsf.org



The EPD owner, Hollman Inc., has the sole ownership, liability, and responsibility for the EPD

DECLARATION HOLDER

Hollman Inc.

HOLLMAN

1825 W Walnut Hill Ln Ste 110, Irving TX, USA 75038

Contact Person: Mr. Tyler Keys Email: tyler@hollman.com

LCA CONSULTANT

Intertek Deutschland GmbH

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www.intertek.com



PROGRAM DETAILS

| PCR 2010:16 version 3.01 was used as | the basic PCR. |
|---|--|
| Product category rules (PCR): | BIFMA PCR for Storage UNCPC 3812 ISO 14025/14040/14044 and EN 15804 |
| PCR review was conducted by: | NSF Certification LLC 789 N. Dixboro, Ann Arbor, MI 48105 www.nsf.org |
| Independent third-party verification of | f the declaration and data, according to ISO 14025:2006: |
| ☐ EPD process certification (internal) | ☑ EPD verification (external) |
| EPD Verifier: | Jack Geibig jgeibig@ecoform.com Jack Hiliz |
| | Tony Favilla afavilla@nsf.org Pailla |
| Third party LCA verifier: | Marie Bellemare, MSc(A) Marie Bellemare Consulting 5687 5 th Avenue Montreal, PQ Canada H1Y 2S9 mariebellemareconsuting@pm.me |
| References | BIFMA PCR for Storage: UNCPC 3812 ISO 14025/40/44; 2006 EN 15804 Hollman Background Report for LCA |
| Accredited or approved by: NSF Intern | ational Technical Committee |
| Procedure for follow-up of data during | g EPD validity involves third party verifier: |
| □ Yes ⊠ No | |



GENERAL INFORMATION

COMPANY INFORMATION

Hollman Inc. (hereinafter referred to as Hollman) is the industry leader in locker design and solutions. Hollman has manufactured more than ten million lockers for high-profile organizations, including the NFL, NBA, MLB, NHL, major American golf courses, corporate centers, country clubs, fitness studios and gyms, college campuses, museums, and hospitals. The lockers are manufactured in Hollman's 350,000-square foot facility located in Irving, Texas. Hollman is interested in better understanding the environmental profile of its Model B locker.

This cradle-to-grave environmental product declaration is for 0.25 m3 of general storage space (which is 0.786 of one Model B Locker), maintained over a 10-year period, produced and delivered from the location owned and operated by Hollman Inc. in the United States, as follows:

Hollman Inc. 1825 W Walnut Hill Ln Ste 110, Irving TX, USA 75038 Further information regarding Hollman Inc. be accessed from www.hollman.com.



PRODUCT INFORMATION

The Locker is manufactured at Irving, Texas. The raw materials for manufacturing the locker are sourced from various locations in the United States and then assembled at Hollman's manufacturing facility. Each material has a standard size and weight. The product is multifunctional storage that can be used at different places from sports locker rooms to office spaces. The lockers are built in a range of variations to match customer requirements. All are very similar in physical terms and in amount of materials used. The model variant that is the subject of this EPD is assumed to have the highest impact and therefore, Hollman has specified that the assessment is to be done for this variant.

The laminate locker model B2 is a 2-tiered locker composed of high-industrial grade particle board core with .030-inch vertical grade high density thermo-fused laminate. The locker includes 2 coat hooks, 1 shelf and soft close hinges. For the purpose of this study, the locker has a Keyless One lock, but other lock options are available. The lockers have passed BIFMA 5.9 standard and have a warranty period of 10 years.





CONTENT DECLARATION

The table below show details the materials included in the full product detailed above and summarized in the chart below. To achieve the functional unit of 0.25m³ of storage space, 0.786 of a storage unit is used.

| Material | Weight for 0.25m³ of storage (kg) | Material Composition in % | Percentage of Recycled Content | Energy Consumption | Resource |
|----------------------|-----------------------------------|---------------------------|--------------------------------------|-----------------------|--------------------------|
| Corrugated board box | 1.454 | 3.120% | 0 | Fossil fuels | Virgin renewable |
| Particle board | 7.309 | 15.681% | 0 | Fossil fuels | Virgin renewable |
| Base oil | 0.036 | 0.076% | 0 | Fossil fuels | Virgin non- renewable |
| Melamine | 24.662 | 52.910% | 0 | Fossil fuels | Virgin non- renewable |
| Polyethylene | 0.036 | 0.076% | 0 | Fossil fuels | Virgin non- renewable |
| Polypropylene | 0.873 | 1.873% | 0 | Fossil fuels | Virgin non- renewable |
| Polystyrene | 4.009 | 8.600% | 0 | Fossil fuels | Virgin non- renewable |
| Polyvinylchloride | 6.968 | 14.949% | 0 | Fossil fuels | Virgin non- renewable |
| Steel | 1.265 | 2.715% | 0 | Fossil fuels | Virgin non- renewable |
| Total | 46.612 | 100.000% | | | |

The percentage of recycled content in the material is zero. The percentages of virgin renewable and non-renewable resources are 18.7% and 81.3% respectively.

Further information regarding the technical and functional characteristics of the product can be obtained from product literature (https://hollman.com/locker-models/).



LCA INFORMATION

GOAL OF STUDY

The goal of this study was to generate an environmental profile of Model B Locker to better understand the associated lifecycle environmental impacts and to allow a Type III EPD to be generated and made public via NSF International. The following product system was investigated:

Model B Locker produced at Hollman's production facility in Irving, Texas, United States.

FUNCTIONAL UNIT

The functional unit provides a reference to which material flows of the product system are normalised and serves as a basis of comparison and is therefore an important factor. The functional unit for this study follows BIFMA PCR for Storage UNCPC 3812 and was defined as:

"0.25 m³ of general storage space, maintained over a 10-year period, including packaging materials used for the final assembled product"

In this study, the functional unit also served as a reference flow and their definitions are identical. Note that the functional unit was defined at the point where the product arrives at the customer gate and any losses before this point were taken into account. The intended audience for this EPD is both internal and external.

Following BIFMA PCR for Storage UNCPC 3812, reference service life is not applicable for this product category.

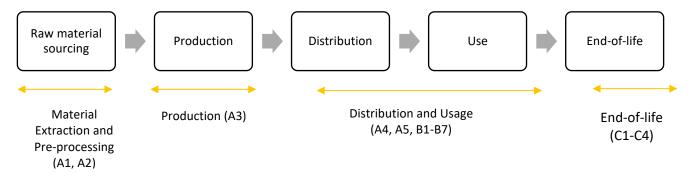
SYSTEM BOUNDARY

The LCA system boundary for this comparative study includes cradle-to-grave life cycle stages. This boundary considers raw material extraction and processing, packaging and transport to the manufacturer, manufacturing, packaging, delivery, use and end of life processing.

The manufacturing, maintenance and decommissioning of capital equipment associated with primary data is excluded (such as factory capital equipment present at the Irving, Texas production facility). Ancillary materials which are used for maintenance of manufacturing equipment are excluded. However, the background infrastructure for secondary data (Ecoinvent datasets) are included if it has already been accounted in the datasets used for this study. The product does not require energy or generate emissions during the use stage. Any repair and maintenance during the life cycle is not included in the scope. Often no maintenance is required, or only minor maintenance using manual tools. For calculating the end-of-life scenario, data of total municipal waste stream of the USA is taken. The usage of 80%/20% is a general disposition determined by the US EPA, and is deemed to be an acceptable disposition rate of final materials. Recycling is not considered as the scenario for end-of-life so the quantity is zero. The study avoids the value choices such as normalization or grouping of indicators results and is conducted to the best of Intertek's knowledge.



Figure 4: System boundary



EXCLUSIONS

The follow exclusions from the scope of the study were made:

- Mass: when using mass as a cut-off criterion, it is appropriate to require the inclusion in the study of all inputs that cumulatively contribute more than a defined percentage to the mass input of the product system being modelled.
 For this study, no inputs have been excluded.
- Energy: similarly, an appropriate decision, when using energy as a criterion, is to require the inclusion in the study
 of those inputs that cumulatively contribute more than a defined percentage of the product system's energy
 inputs.
 - For this study, no energy requirements have been excluded.
- Environmental significance: decisions on cut-off criteria should be made to include inputs that contribute more
 than an additional defined amount of the estimated quantity of individual data of the product system that are
 specially selected because of environmental relevance.

In addition to exclusions based on cut-off criteria, the following general exclusions from the scope of the study were made:

- Production and disposal of infrastructure (machines, transport vehicles, roads, etc.) and their maintenance;
- Transport of employees to and from their normal place of work and business travel; and
- Environmental impacts associated with support functions (e.g. R&D, marketing, finance, management etc.).

ASSUMPTIONS

During this LCA a number of assumptions were made, which are documented below for transparency:

- 1. All input information is assumed to be as accurate as possible at the time of the study (2021).
- 2. The weight of particle board is taken on the basis of generic data as per the dimensions stated.
- 3. For calculating the end-of-life scenario, data of total municipal waste stream of the USA is taken. The data is from EPA (US environmental protection agency), Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2006.



DATA SOURCES AND QUALITY

Quantitative and qualitative data were collected for all processes within the system boundary and these data were used to compile the LCI. Specific data were sought as a preference, however, they could not be collected for upstream and downstream lifecycle stages. Specific data for all core processes were collected from Hollman from their site in Irving using data collection sheets via an iterative process and represent a time period one year from 2019.01.01 to 2019.12.01. Data for an entire reference year could not be used because during the early part of 2019 production was being scaled-up, and therefore was not representative of current commercial manufacturing. Selected generic data were collected for the majority of upstream and downstream lifecycle stages from the LCI database ecoinvent v3 (cut-off) and literature sources In some cases, for minor processes, proxy data had to be used where better data could not be sourced.

The LCA software SimaPro (version 9) was used to build a model for the product systems under investigation using specific and generic inventory data. In addition, SimaPro was used to apply characterisation models and factors from the impact assessment methods to generate results.

The table below provides details on the parameters for describing environmental impacts that were considered in this study, including the life cycle impact assessment (LCIA) method used. Characterisation models and factors from these LCIA methods were used unaltered and as provided in this LCA. In addition, environmental information describing resource use, waste and other output flows were also derived from LCI data and are presented in this EPD alongside parameters for describing environmental impacts.

| Impact category | Explanation | Parameter and unit | LCIA method |
|-----------------|--|--|-------------|
| Global warming | Global warming is a long-term rise in the average temperature. Climate change is a change in global or regional climate patterns, a change apparent from the mid- to late-20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced using fossil fuels. | Global warming potential (GWP), kg CO ₂ eq | TRACI 2.1 |
| Acidification | Acidification potential refers to processes that can increase the hydrogen ion concentration ([H+]) in aquatic and soil systems, such as atmospheric deposition of sulphur, nitrogen and phosphorous compounds. Any change from the natural pH can have detrimental effects on plant and aquatic life. | Acidification potential (AP) [mol H+ eq. / kg of emission] | TRACI 2.1 |
| Eutrophication | Eutrophication is an excessive richness of nutrients in a lake or other body of water, which causes a dense growth of plant life and results in oxygen depletion. This nutrient pollution is typically generated in aquatic environments from phosphorous or nitrogen compounds | Eutrophication potential (EP) [kg N eq. / kg of emission] | TRACI 2.1 |



| Impact category | Explanation | Parameter and unit | LCIA method |
|---------------------------------|---|--|-------------|
| | through discharges from sewage treatment works or pulp and paper mills and storm water run-off of fertilisers or manure. | | |
| Formation of tropospheric ozone | Ozone formation (or photochemical oxidant formation, or smog) is a product of reactions that take place between NOx and volatile organic compounds (VOCs) in the presence of UV radiation. Low-level O ₃ is a key photochemical oxidant of concern as it is toxic to humans. Ozone formation is a measure of the adverse effects from the formation of low-level ozone and other photooxidants. Models are used to calculate photochemical oxidation, and they are based on the mass of each released substance and the photochemical ozone creation potential (POCP) of the substance. This is a measure of how likely it is that the substance will contribute towards smog formation and are calculated from the change in ozone concentration in a set volume of air with the introduction of the emission of a substance relative to the change in | Photochemical ozone creation potential (POCP, or "Smog") [kg O3 eq. / kg of emission]. | TRACI 2.1 |
| | emission of ethylene. | | |
| Ozone Depletion Potential | Potential impact of all substances that contribute to stratospheric ozone depletion. A globally recognized method of calculating the relative importance of substances to contribute significantly to the breakdown of the ozone layer. Ozone depletion can lead to increased ultraviolet-B radiation, have human health impacts as well as damage to crops, materials and marine life. Substances such as CFC's, HCFC's, chlorine and bromine are reported in CFC-11 equivalent. | Ozone Depletion Potential kg CFC-11 eq (ADP- elements), kg Sb equiv. | TRACI 2.1 |



ALLOCATION

For cases where there is more than one product in the system being studied, BIFMA PCR for Storage UNCPC 3812 prescribes the following procedure for the allocation of material and energy flows and environmental emissions.

- 1. Wherever possible, allocation should be avoided, by either dividing the unit process into two or more subprocesses or by expanding the product system.
- 2. Where allocation cannot be avoided, the product system should be partitioned based on logical physical relationships.
- 3. Where physical relationships alone cannot be established, the product system should be partitioned based on economic value of products, also known as economic allocation.

In this study, allocation procedures for multi-product processes followed the ISO approach above. In terms of generic data, the main database used, ecoinvent v3 (cut-off), defaults to an economic allocation for most processes. However, in some cases a mass-based allocation is used, where there is a direct physical relationship. The allocation approach of specific ecoinvent modules is documented on their website and method reports (see www.ecoinvent.org).

In this study a "cut-off" method (also known as recycled content or 100:0 approach) was applied to all cases of end-of-life allocation, including in the case of generic data, where the ecoinvent database with a cut-off by classification end-of-life allocation method was used. In this approach, environmental burdens and benefits of recycled / reused materials are given to the product system consuming them, rather than the system providing them and are quantified based on recycling content of the material under investigation. This is a common approach in LCA for materials where there is a loss in inherent properties during recycling, the supply of recycled material exceeds demand and recycled content of the product is independent of whether it is recycled downstream. It is in compliance with the ISO standards on LCA and is prescribed in BIFMA PCR for Storage UNCPC 3812.

CUT-OFF CRITERIA

In the process of building an LCI it is typical to exclude items considered to have a negligible contribution to results. In order to do this in a consistent and robust manner there must be confidence that the exclusion is fair and reasonable. To this end, cut-off criteria were defined in this study, which allow items to be neglected if they meet the criteria. In accordance with BIFMA PCR for Storage UNCPC 3812, exclusions could be made if they were expected to be within the below criteria:

• Environmental significance: if a flow is anticipated to be less than 1% of the declared environmental impact categories it may be excluded.

LIFE CYCLE STAGES

The results are provided according to the following life cycle modules:

| Module | Description | Module | Description | Module | Description |
|--------|--|--------|-----------------------------|--------|--------------------------|
| A1 | Product Stage: Raw | B1 | Use Stage: Use | C1 | EOL: Deconstruction |
| A2 | Material Supply Product Stage: Transport | B2 | Use Stage: Maintenance | C2 | EOL: Transport |
| A3 | Product Stage: Manufacturing | В3 | Use Stage: Repair | СЗ | EOL: Waste Processing |
| A4 | Construction Process Stage: Transport | B4 | Use Stage: Replacement | C4 | EOL: Disposal |
| A5 | Construction Process Stage: Installation | B5 | Use Stage: Refurbishment | D | Benefits beyond system |
| | - | В6 | Operational Energy Use | | · |
| | | В7 | Operational Water Use | | |



COMPARABILITY

Note that EPDs within the same product category but from different programs may not be comparable. In addition, EPDs of plastic products may not be comparable if they do not comply with BIFMA PCR for Storage UNCPC 3812, even if they comply with earlier versions of BIFMA PCR.



ENVIRONMENTAL PERFORMANCE

The environmental performance of the assessed product is declared and reported using the parameters as specified in BIFMA PCR. These LCIA results and other environmental results are presented in the table below per functional unit to three significant figures, and broken down into upstream, core and downstream lifecycle stages.

| Parameter | Unit | Raw materials (A1, A2) | Production (A3) | Distribution (A4, A5, B1- B7) | End of life (C1-C4) | Total | | | | |
|--|---|------------------------------|--------------------|-------------------------------------|------------------------|----------|--|--|--|--|
| | Parameters describing environmental impacts | | | | | | | | | |
| Global warming potential (GWP) | kg CO ₂ equiv. | 2.13E+02 | 2.99E+01 | 9.92E+00 | 3.03E+01 | 2.83E+02 | | | | |
| Acidification potential (AP) | kg SO ₂ eq | 1.19E+00 | 8.43E-02 | 5.20E-02 | 1.17E-02 | 1.34E+00 | | | | |
| Eutrophication potential (EP) | kg N eq. | 5.25E-01 | 1.92E-01 | 1.25E-02 | 3.46E-01 | 1.08E+00 | | | | |
| Formation potential of tropospheric ozone (POCP) | kg O₃ eq | 9.36E+00 | 8.30E-01 | 1.30E+00 | 2.19E-01 | 1.17E+01 | | | | |
| Ozone Depletion Potential (ODP) | CFC-11 eq (ADP- elements), kg Sb equiv. | 2.96E-05 | 2.93E-06 | 2.35E-06 | 2.76E-07 | 3.51E-05 | | | | |
| | | Parameters d | escribing use o | of resources | | | | | | |
| Primary Energy Demand | MJ, net calorific value | 2.96E-05 | 2.93E-06 | 2.35E-06 | 2.76E-07 | 3.51E-05 | | | | |
| Net use of fresh water | kg | 4.15E+03 | 5.49E+02 | 1.63E+02 | 2.16E+01 | 4.88E+03 | | | | |
| Parameters describing use of resources | | | | | | | | | | |
| Human Toxicity | CTUh | 3.50E+02 | 6.02E+00 | 5.41E-01 | 9.79E-01 | 3.58E+02 | | | | |
| Land Usage | Pt | 1.50E-07 | 6.78E-09 | 4.38E-09 | 3.35E-09 | 1.64E-07 | | | | |
| Ecotoxicity | CTUe | 8.91E+02 | 7.94E+01 | 1.31E+02 | 3.04E+01 | 1.13E+03 | | | | |



Environmental impacts for other parameters are as follows:

| | | | l | | | | | |
|--|--|--------------------|--------------------|--------------------|---|--|--|--|
| Unit | Raw | Production | Distribution | | Total | | | |
| | materials | (A3) | (A4, A5, B1- | (C1-C4) | | | | |
| | (A1, A2) | | B7) | | | | | |
| Parameters describing air emissions | | | | | | | | |
| kg | 5.65E-01 | 4.80E-02 | 9.00E-03 | 6.54E-03 | 6.29E-01 | | | |
| kg | 0.00E+00 | 3.30E-03 | 0.00E+00 | 0.00E+00 | 3.30E-03 | | | |
| kg | 9.37E+00 | 9.67E-01 | 0.00E+00 | 0.00E+00 | 1.03E+01 | | | |
| kg | 3.57E-02 | 0.00E+00 | 1.12E-08 | 3.94E-09 | 3.57E-02 | | | |
| kg | 3.30E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.30E-03 | | | |
| kg | 6.31E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 6.31E-03 | | | |
| Pa | arameters de | scribing wate | r emissions | | | | | |
| kg | 1.76E-01 | 6.62E-02 | 1.74E-03 | 4.70E-03 | 2.49E-01 | | | |
| kg | 5.48E-02 | 2.17E-02 | 5.49E-04 | 1.19E-01 | 1.96E-01 | | | |
| kg | 2.40E-10 | 5.97E-15 | 4.08E-15 | 6.51E-15 | 2.40E-10 | | | |
| kg | 4.54E-04 | 9.84E-05 | 5.46E-06 | 7.03E-05 | 6.28E-04 | | | |
| kg | 9.26E-03 | 1.78E-04 | 7.08E-05 | 2.27E-02 | 3.22E-02 | | | |
| kg | 2.84E-05 | 5.53E-06 | 2.46E-07 | 6.56E-05 | 9.98E-05 | | | |
| kg | 3.82E-04 | 1.63E-05 | 2.05E-06 | 5.74E-04 | 9.75E-04 | | | |
| kg | 1.25E-07 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.25E-07 | | | |
| Pa | arameters de | scribing use o | f resources | | | | | |
| MJ | 3.64E+03 | 3.63E+02 | 1.58E+02 | 1.95E+01 | 4.18E+03 | | | |
| MJ | 1.84E+02 | 1.47E+02 | 2.43E+00 | 1.19E+00 | 3.34E+02 | | | |
| MJ | 4.05E-02 | 1.07E-03 | 3.16E-03 | 2.91E-04 | 4.50E-02 | | | |
| MJ | 2.24E+02 | 1.09E+01 | 5.49E-01 | 1.87E-01 | 2.35E+02 | | | |
| MJ | 2.22E+01 | 1.32E+01 | 2.68E-01 | 1.60E-01 | 3.58E+01 | | | |
| MJ | 7.67E+01 | 1.58E+01 | 1.08E+00 | 5.45E-01 | 9.41E+01 | | | |
| Parameters describing waste management | | | | | | | | |
| kg | 3.74E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.74E-03 | | | |
| kg | 2.84E-06 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.84E-06 | | | |
| kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | | | |
| | kg k | Materials (A1, A2) | Materials (A1, A2) | Materials (A1, A2) | materials (A1, A2) (A3) (A4, A5, B1-B7) (C1-C4) B7) Parameters describing air emissions kg 5.65E-01 4.80E-02 9.00E-03 6.54E-03 kg 0.00E+00 3.30E-03 0.00E+00 0.00E+00 kg 9.37E+00 9.67E-01 0.00E+00 0.00E+00 kg 3.57E-02 0.00E+00 1.12E-08 3.94E-09 kg 3.30E-03 0.00E+00 0.00E+00 0.00E+00 kg 6.31E-03 0.00E+00 0.00E+00 0.00E+00 Parameters describing water emissions kg 1.76E-01 6.62E-02 1.74E-03 4.70E-03 kg 5.48E-02 2.17E-02 5.49E-04 1.19E-01 kg 5.48E-02 2.17E-02 5.49E-04 1.19E-01 kg 4.54E-04 9.84E-05 5.46E-06 7.03E-05 kg 9.26E-03 1.78E-04 7.08E-05 2.27E-02 kg 2.84E-05 5.53E-06 2.46E-07 6.56E-05 | | | |



| Parameter | Unit | Raw materials (A1, A2) | Production (A3) | Distribution (A4, A5, B1- B7) | End of life (C1-C4) | Total |
|---|------|------------------------------|-----------------|-------------------------------------|------------------------|----------|
| Incineration without energy recovery | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Landfill (non- hazardous solid waste) | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Landfill avoidance (recycling) | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

It can be seen that raw materials (A1-2) are the most significant contributors to the environmental impact of the product, contributing 75.21% of the total life cycle impact in the case of GWP. Production (A3) contributes 10.57% of GWP, distribution (A4-5, B1-7) contributes 3.51% and end of life (C1-4) contributes 10.71% of GWP.

Note that the LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.



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