





## Product

### Product description:

The S70-3 barstool, designed by Börge Lindau and Bo Linderkrantz, is part of an entire collection, launched in 1968. The commanding design element of the series, both visual and structural, was steel tubing, which gave the series its name. The large diameter of the tubing was a radical departure. This feature plus a range of bold colors brought instant global recognition to the series and to Lammhults. The S70-3 stool remains the fresh face of Lammhults design, decade after decade.

### Product specification

Frame of 32 mm chromium plated or powder coated steel tubing. Footrest always in chrome. Seat of plywood with birch veneer, natural or lacquered, or upholstered. Stackable. Suspensible on table.

| Materials                    | kg   | %      | Recycled share in material (kg) | Recycled share in material (%) |
|------------------------------|------|--------|---------------------------------|--------------------------------|
| Metal - Aluminium            | 0,02 | 0,34   | 0,00                            | 0,00                           |
| Metal - Steel                | 5,11 | 71,94  | 0,00                            | 0,00                           |
| Plastic - Nylon (PA)         | 0,01 | 0,08   | 0,00                            | 0,00                           |
| Plastic - Polypropylene (PP) | 0,04 | 0,62   | 0,00                            | 0,00                           |
| Powder coating               | 0,06 | 0,84   | 0,00                            | 0,00                           |
| Wood - Plywood               | 1,86 | 26,18  | 0,00                            | 0,00                           |
| Total                        | 7,11 | 100,00 | 0,00                            |                                |

| Packaging                  | kg   | %      | Recycled share in material (kg) | Recycled share in material (%) |
|----------------------------|------|--------|---------------------------------|--------------------------------|
| Packaging - Cardboard      | 0,65 | 28,09  | 0,00                            | 0,00                           |
| Packaging - Plastic        | 0,10 | 4,22   | 0,00                            | 0,00                           |
| Packaging - Plastic straps | 0,05 | 2,15   | 0,00                            | 0,00                           |
| Recycled cardboard         | 1,52 | 65,54  | 1,52                            | 100,00                         |
| Total incl. packaging      | 9,43 | 100,00 | 1,52                            |                                |

### Technical data:

Height 71cm

Width 48cm

Depth 48cm

Seat height 63cm

S70-3 meets the requirements of EN 16139:2013, test level 1, and Möbelfakta.

### Market:

Available world wide

### Reference service life, product

15 years (warranty 5 years)

### Reference service life, building

## LCA: Calculation rules

### Declared unit:

1 pcs S70-3 barstool

### Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

### Data quality:

Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

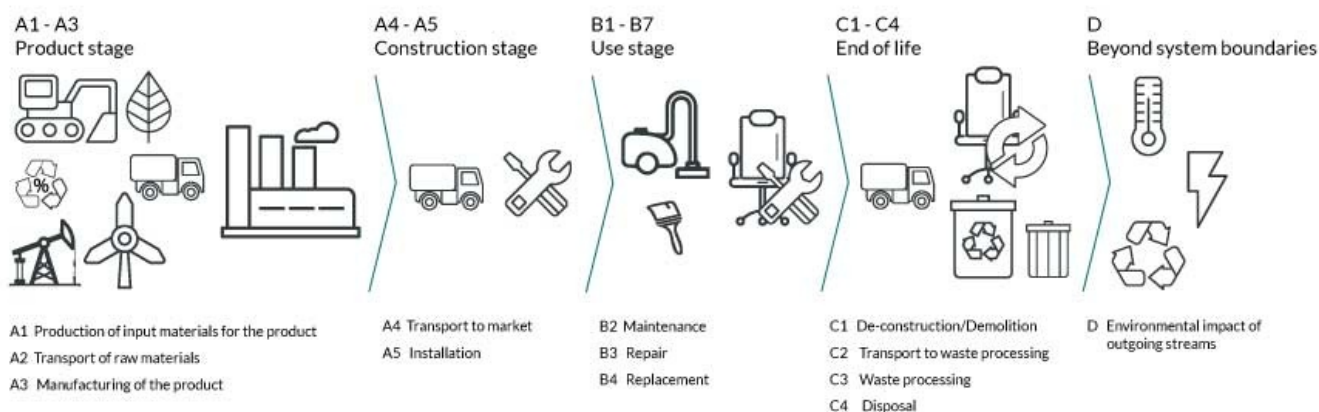
| Materials                    | Source                 | Data quality | Year |
|------------------------------|------------------------|--------------|------|
| Metal - Aluminium            | ecoinvent 3.6          | Database     | 2019 |
| Metal - Steel                | ecoinvent 3.6          | Database     | 2019 |
| Packaging - Cardboard        | Modified ecoinvent 3.6 | Database     | 2019 |
| Packaging - Plastic          | ecoinvent 3.6          | Database     | 2019 |
| Packaging - Plastic straps   | ecoinvent 3.6          | Database     | 2019 |
| Plastic - Nylon (PA)         | ecoinvent 3.6          | Database     | 2019 |
| Plastic - Polypropylene (PP) | ecoinvent 3.6          | Database     | 2019 |
| Powder coating               | Ecoinvent 3.6          | Database     | 2019 |
| Recycled cardboard           | Modified ecoinvent 3.6 | Database     | 2019 |
| Wood - Plywood               | modified ecoinvent 3.6 | Database     | 2019 |

**System boundaries (X=included, MND=module not declared, MNR=module not relevant)**

| Product stage |           |               | Construction installation stage |          | Use stage |             |        |             |               |                        | End of life stage     |                            |           |                  | Beyond the system boundaries |                                    |
|---------------|-----------|---------------|---------------------------------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|------------------------------|------------------------------------|
| Raw materials | Transport | Manufacturing | Transport                       | Assembly | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal                     | Reuse-Recovery-Recycling-potential |
| A1            | A2        | A3            | A4                              | A5       | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4                           | D                                  |
| X             | X         | X             | X                               | X        | MND       | X           | X      | X           | MND           | MND                    | MND                   | X                          | X         | X                | X                            | X                                  |

**System boundary:**

The analysis is a cradle-to-cradle, A1-D, where some B-stages that were assumed to be neglectable are not included. The A1-A4 stages includes the extraction and production of raw materials, transportation to the production site, the production process itself, and an estimated transport distance to the market. A5 includes the generated waste from the packaging of the product after the assembly at the customer. The only B-stage that is assumed to be relevant is B2, which includes assumptions on how the customer takes care of the product according to Lammhults' care instructions. The C- and D-stages includes the use of materials and energy for deconstruction, the transport to waste management, the waste processes, disposal of materials that cannot be processed, and the potential of reuse, recovery, and recycling of the product.



**Additional technical information:**

<https://www.lammhults.se/products/barstools-stools/s70-3>

Lammhults Care & Maintenance: <https://issuu.com/lammhults/docs/lammhultscaremaintenance2205>

## LCA: Scenarios and additional technical information














The following information describe the scenarios in the different modules of the EPD.














Some assumptions have been made regarding the products lifetime after leaving the factory gates. The product is assumed to be transported to the capital of each country sold/delivered to. An average distance (A4) to the customer has been calculated through this data. In the A5 phase, the packaging of the product becomes waste, and the impacts are added automatically according to assumptions made in the EPD tool on waste handling on-site. In the use stage, the assumption is that the customer takes care of the product by cleaning the product with a dry cloth or a slightly damp cloth with a few drops of very mild cleaning detergent. For the end-of-life stage of the product, it has been assumed that there is a 50 km distance from the customer to a waste terminal. The rest of the values are automatically filled in by the tool. For the D-stage, automatic values are filled in, according to generic data.

| Transport from production place to user (A4)   | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit  | Value (Liter/tonne) |
|--|---------------------------------------|---------------|-------------------------|-------|---------------------|
| Truck, 16-32 tonnes, EURO 6 (km)   | 36,7 %                                | 548           | 0,043                   | l/tkm | 23,56               |
| Assembly (A5)  |                                       |               |                         |       |                     |
|  | Unit                                  | Value         |                         |       |                     |
| Waste, packaging, cardboard, 100 % recycled, to average treatment (kg)   | kg                                    | 1,52          |                         |       |                     |
| Waste, packaging, corrugated board box, 0 % recycled, to average treatment (kg)  | kg                                    | 0,65          |                         |       |                     |
| Waste, packaging, PET straps, to average treatment - A5 (kg)   | kg                                    | 0,05          |                         |       |                     |
| Waste, packaging, plastic film (LDPE), to average treatment - A5 (kg)  | kg                                    | 0,10          |                         |       |                     |
| Maintenance (B2)   |                                       |               |                         |       |                     |
|  | Unit                                  | Value         |                         |       |                     |
| Household detergent, 5% soap solution (kg)   | kg/DU                                 | 0,00          |                         |       |                     |
| Wastewater, average treatment (m3)   | m3                                    | 0,00          |                         |       |                     |
| Water, tap water (m3)  | m3/DU                                 | 0,00          |                         |       |                     |
| Transport to waste processing (C2)   |                                       |               |                         |       |                     |
|  | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit  | Value (Liter/tonne) |
| Truck, 16-32 tonnes, EURO 6 (km)   | 36,7 %                                | 50            | 0,043                   | l/tkm | 2,15                |
| Waste processing (C3)  |                                       |               |                         |       |                     |
|  | Unit                                  | Value         |                         |       |                     |
| Waste treatment per kg Non-hazardous waste, incineration with fly ash extraction - C3 (kg)   | kg                                    | 0,06          |                         |       |                     |
| Waste treatment per kg Plastics, Mixture, municipal incineration with fly ash extraction (kg)  | kg                                    | 0,01          |                         |       |                     |
| Waste treatment per kg Polypropylene (PP), incineration with fly ash extraction - C3 (kg)  | kg                                    | 0,04          |                         |       |                     |
| Waste treatment per kg Scrap aluminium, incineration with fly ash extraction (kg)  | kg                                    | 0,02          |                         |       |                     |
| Waste treatment per kg Scrap steel, incineration with fly ash extraction (kg)  | kg                                    | 5,11          |                         |       |                     |
| Waste treatment per kg Wood, incineration with fly ash extraction (kg)   | kg                                    | 1,86          |                         |       |                     |
| Waste, materials to recycling (kg)   | kg                                    | 1,74          |                         |       |                     |
| Disposal (C4)  |                                       |               |                         |       |                     |
|  | Unit                                  | Value         |                         |       |                     |
| Landfilling of ashes and residues from incineration of Scrap aluminium (kg)  | kg                                    | 0,02          |                         |       |                     |
| Landfilling of ashes and residues from incineration of Scrap steel (kg)  | kg                                    | 3,38          |                         |       |                     |
| Landfilling of ashes from incineration of Non-hazardous waste, process per kg ashes and residues - C4 (kg)   | kg                                    | 0,01          |                         |       |                     |
| Landfilling of ashes from incineration of Plastics, Mixture, municipal incineration with fly ash extraction, process per kg ashes and residues - C4 (kg) | kg                                    | 0,00          |                         |       |                     |
| Landfilling of ashes from incineration of Polypropylene, PP, process per kg ashes and residues - C4 (kg)   | kg                                    | 0,00          |                         |       |                     |
| Landfilling of ashes from incineration of Wood, process per kg ashes and residues (kg)   | kg                                    | 0,02          |                         |       |                     |
| Benefits and loads beyond the system boundaries (D)  |                                       |               |                         |       |                     |
|  | Unit                                  | Value         |                         |       |                     |
| Substitution of electricity, in Norway (MJ)  | MJ                                    | 1,41          |                         |       |                     |
| Substitution of primary aluminium with net scrap (kg)  | kg                                    | 0,00          |                         |       |                     |
| Substitution of primary steel with net scrap (kg)  | kg                                    | 1,73          |                         |       |                     |
| Substitution of thermal energy, district heating, in Norway (MJ)   | MJ                                    | 21,33         |                         |       |                     |

**LCA: Results**

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

| Environmental impact   |                        |           |          |          |          |    |  |
|--|------------------------|-----------|----------|----------|----------|----|--|
| Indicator  | Unit                   | A1-A3     | A4       | A5       | B2       | B3 |  |
|  GWP-total                        | kg CO <sub>2</sub> -eq | 2,38E+01  | 8,45E-01 | 3,74E+00 | 6,33E-04 | 0  |  |
|  GWP-fossil                       | kg CO <sub>2</sub> -eq | 2,93E+01  | 8,44E-01 | 4,69E-02 | 4,54E-04 | 0  |  |
|  GWP-biogenic                     | kg CO <sub>2</sub> -eq | -5,53E+00 | 3,49E-04 | 3,69E+00 | 2,31E-05 | 0  |  |
|  GWP-luluc                        | kg CO <sub>2</sub> -eq | 1,20E-01  | 3,00E-04 | 1,25E-05 | 1,56E-04 | 0  |  |
|  ODP                              | kg CFC11 -eq           | 2,59E-06  | 1,91E-07 | 8,13E-09 | 4,90E-11 | 0  |  |
|  AP                               | mol H+ -eq             | 1,54E-01  | 2,43E-03 | 1,81E-04 | 3,31E-06 | 0  |  |
|  EP-FreshWater                    | kg P -eq               | 1,96E-03  | 6,74E-06 | 3,13E-07 | 8,26E-07 | 0  |  |
|  EP-Marine                        | kg N -eq               | 3,49E-02  | 4,80E-04 | 6,83E-05 | 1,65E-06 | 0  |  |
|  EP-Terrestrial                   | mol N -eq              | 3,79E-01  | 5,37E-03 | 6,48E-04 | 8,09E-06 | 0  |  |
|  POCP                             | kg NMVOC -eq           | 1,31E-01  | 2,06E-03 | 1,88E-04 | 1,91E-06 | 0  |  |
|  ADP-minerals&metals <sup>1</sup> | kg Sb-eq               | 8,20E-04  | 2,33E-05 | 9,18E-07 | 1,64E-08 | 0  |  |
|  ADP-fossil <sup>1</sup>          | MJ                     | 4,28E+02  | 1,28E+01 | 5,40E-01 | 7,06E-03 | 0  |  |
|  WDP <sup>1</sup>                 | m <sup>3</sup>         | 9,89E+03  | 1,23E+01 | 7,94E-01 | 1,07E-01 | 0  |  |

| Indicator  | Unit                   | B4 | C1 | C2       | C3       | C4       | D         |
|--|------------------------|----|----|----------|----------|----------|-----------|
|  GWP-total                        | kg CO <sub>2</sub> -eq | 0  | 0  | 7,71E-02 | 3,41E+00 | 3,75E-02 | -2,06E+00 |
|  GWP-fossil                       | kg CO <sub>2</sub> -eq | 0  | 0  | 7,70E-02 | 3,14E-01 | 3,74E-02 | -2,05E+00 |
|  GWP-biogenic                     | kg CO <sub>2</sub> -eq | 0  | 0  | 3,19E-05 | 3,10E+00 | 2,82E-05 | -1,41E-03 |
|  GWP-luluc                        | kg CO <sub>2</sub> -eq | 0  | 0  | 2,74E-05 | 1,30E-05 | 1,14E-05 | -5,53E-03 |
|  ODP                              | kg CFC11 -eq           | 0  | 0  | 1,74E-08 | 5,26E-09 | 1,18E-08 | -9,01E-03 |
|  AP                               | mol H+ -eq             | 0  | 0  | 2,21E-04 | 5,07E-04 | 2,68E-04 | -1,06E-02 |
|  EP-FreshWater                    | kg P -eq               | 0  | 0  | 6,15E-07 | 1,29E-06 | 3,70E-07 | -1,29E-04 |
|  EP-Marine                        | kg N -eq               | 0  | 0  | 4,38E-05 | 2,22E-04 | 9,57E-05 | -2,31E-03 |
|  EP-Terrestrial                   | mol N -eq              | 0  | 0  | 4,90E-04 | 2,38E-03 | 1,06E-03 | -2,38E-02 |
|  POCP                             | kg NMVOC -eq           | 0  | 0  | 1,88E-04 | 6,27E-04 | 3,05E-04 | -1,06E-02 |
|  ADP-minerals&metals <sup>1</sup> | kg Sb-eq               | 0  | 0  | 2,13E-06 | 2,98E-07 | 6,58E-07 | -3,41E-05 |
|  ADP-fossil <sup>1</sup>          | MJ                     | 0  | 0  | 1,16E+00 | 4,62E-01 | 8,69E-01 | -1,81E+01 |
|  WDP <sup>1</sup>                 | m <sup>3</sup>         | 0  | 0  | 1,13E+00 | 9,33E-01 | 1,65E+00 | 6,41E+01  |







GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"







\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

**Remarks to environmental impacts**

| Additional environmental impact indicators  |                   |          |          |          |          |    |  |
|---|-------------------|----------|----------|----------|----------|----|--|
| Indicator   | Unit              | A1-A3    | A4       | A5       | B2       | B3 |  |
|  PM                  | Disease incidence | 3,58E-06 | 5,17E-08 | 2,72E-09 | 3,60E-11 | 0  |  |
|  IRP <sup>2</sup>    | kgBq U235 -eq     | 4,07E+00 | 5,58E-02 | 2,32E-03 | 4,49E-05 | 0  |  |
|  ETP-fw <sup>1</sup> | CTUe              | 1,49E+03 | 9,46E+00 | 7,02E-01 | 1,66E-02 | 0  |  |
|  HTP-c <sup>1</sup>  | CTUh              | 1,45E-07 | 0,00E+00 | 2,10E-11 | 1,00E-12 | 0  |  |
|  HTP-nc <sup>1</sup> | CTUh              | 9,32E-07 | 1,03E-08 | 8,68E-10 | 2,70E-11 | 0  |  |
|  SQP <sup>1</sup>    | dimensionless     | 1,15E+03 | 8,93E+00 | 4,14E-01 | 7,94E-03 | 0  |  |

| Indicator   | Unit              | B4 | C1 | C2       | C3       | C4       | D         |
|---|-------------------|----|----|----------|----------|----------|-----------|
|  PM                  | Disease incidence | 0  | 0  | 4,72E-09 | 1,21E-08 | 4,93E-09 | -2,22E-07 |
|  IRP <sup>2</sup>    | kgBq U235 -eq     | 0  | 0  | 5,09E-03 | 1,18E-03 | 3,47E-03 | -5,68E-03 |
|  ETP-fw <sup>1</sup> | CTUe              | 0  | 0  | 8,63E-01 | 2,86E+00 | 5,03E-01 | -1,16E+02 |
|  HTP-c <sup>1</sup>  | CTUh              | 0  | 0  | 0,00E+00 | 3,21E-10 | 1,70E-11 | -9,40E-09 |
|  HTP-nc <sup>1</sup> | CTUh              | 0  | 0  | 9,43E-10 | 4,78E-09 | 4,66E-10 | 1,89E-07  |
|  SQP <sup>1</sup>    | dimensionless     | 0  | 0  | 8,15E-01 | 9,48E-02 | 1,89E+00 | -1,30E+01 |











PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)











"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.






| Resource use  |       |                |          |          |           |          |    |  |
|---|-------|----------------|----------|----------|-----------|----------|----|--|
| Indicator   |       | Unit           | A1-A3    | A4       | A5        | B2       | B3 |  |
|  | PERE  | MJ             | 3,26E+02 | 1,83E-01 | 9,32E-03  | 2,28E-03 | 0  |  |
|  | PERM  | MJ             | 4,53E+01 | 0,00E+00 | -1,93E+01 | 0,00E+00 | 0  |  |
|  | PERT  | MJ             | 3,71E+02 | 1,83E-01 | -1,93E+01 | 2,28E-03 | 0  |  |
|  | PENRE | MJ             | 4,44E+02 | 1,28E+01 | 5,40E-01  | 7,27E-03 | 0  |  |
|  | PENRM | MJ             | 6,99E+00 | 0,00E+00 | -5,31E+00 | 0,00E+00 | 0  |  |
|  | PENRT | MJ             | 4,51E+02 | 1,28E+01 | -4,77E+00 | 7,27E-03 | 0  |  |
|  | SM    | kg             | 1,52E+00 | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0  |  |
|  | RSF   | MJ             | 1,21E+00 | 6,54E-03 | 3,01E-04  | 6,56E-05 | 0  |  |
|  | NRSF  | MJ             | 2,15E+00 | 2,34E-02 | 1,19E-03  | 6,55E-05 | 0  |  |
|  | FW    | m <sup>3</sup> | 4,19E-01 | 1,36E-03 | 2,58E-04  | 1,02E-03 | 0  |  |

| Indicator   |       | Unit           | B4 | C1 | C2       | C3        | C4       | D         |
|---|-------|----------------|----|----|----------|-----------|----------|-----------|
|    | PERE  | MJ             | 0  | 0  | 1,67E-02 | 2,10E-02  | 1,58E-02 | -1,23E+01 |
|    | PERM  | MJ             | 0  | 0  | 0,00E+00 | -2,60E+01 | 0,00E+00 | 0,00E+00  |
|    | PERT  | MJ             | 0  | 0  | 1,67E-02 | -2,60E+01 | 1,58E-02 | -1,23E+01 |
|   | PENRE | MJ             | 0  | 0  | 1,16E+00 | 4,68E-01  | 8,69E-01 | -1,81E+01 |
|  | PENRM | MJ             | 0  | 0  | 0,00E+00 | -1,68E+00 | 0,00E+00 | 0,00E+00  |
|  | PENRT | MJ             | 0  | 0  | 1,16E+00 | -1,21E+00 | 8,69E-01 | -1,81E+01 |
|  | SM    | kg             | 0  | 0  | 0,00E+00 | 0,00E+00  | 0,00E+00 | 0,00E+00  |
|  | RSF   | MJ             | 0  | 0  | 5,96E-04 | 4,43E-04  | 4,20E-04 | 6,69E-02  |
|  | NRSF  | MJ             | 0  | 0  | 2,13E-03 | 0,00E+00  | 2,60E-02 | 1,36E+00  |
|  | FW    | m <sup>3</sup> | 0  | 0  | 1,25E-04 | 7,14E-04  | 7,84E-04 | -1,77E-02 |




PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

| End of life - Waste   |      |      |          |          |          |          |    |  |
|---|------|------|----------|----------|----------|----------|----|--|
| Indicator   |      | Unit | A1-A3    | A4       | A5       | B2       | B3 |  |
|  | HWD  | kg   | 9,94E-01 | 6,58E-04 | 0,00E+00 | 1,72E-05 | 0  |  |
|  | NHWD | kg   | 9,21E+00 | 6,21E-01 | 2,32E+00 | 1,18E-04 | 0  |  |
|  | RWD  | kg   | 2,46E-03 | 8,69E-05 | 0,00E+00 | 3,91E-08 | 0  |  |






  

| Indicator   |      | Unit | B4 | C1 | C2       | C3       | C4       | D         |
|---|------|------|----|----|----------|----------|----------|-----------|
|  | HWD  | kg   | 0  | 0  | 6,01E-05 | 0,00E+00 | 3,41E+00 | -9,90E-03 |
|  | NHWD | kg   | 0  | 0  | 5,66E-02 | 6,00E-02 | 2,73E-02 | -8,27E-01 |
|  | RWD  | kg   | 0  | 0  | 7,93E-06 | 0,00E+00 | 5,35E-06 | -5,15E-06 |






HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

\*Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

| End of life - Output flow   |     |      |          |          |          |          |    |  |
|---|-----|------|----------|----------|----------|----------|----|--|
| Indicator   |     | Unit | A1-A3    | A4       | A5       | B2       | B3 |  |
|    | CRU | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0  |  |
|    | MFR | kg   | 6,22E-01 | 0,00E+00 | 2,10E+00 | 0,00E+00 | 0  |  |
|    | MER | kg   | 8,64E-01 | 0,00E+00 | 1,04E-05 | 0,00E+00 | 0  |  |
|    | EEE | MJ   | 3,70E-01 | 0,00E+00 | 1,24E-01 | 0,00E+00 | 0  |  |
|  | EET | MJ   | 5,60E+00 | 0,00E+00 | 1,88E+00 | 0,00E+00 | 0  |  |

| Indicator   |     | Unit | B4 | C1 | C2       | C3       | C4       | D        |
|---|-----|------|----|----|----------|----------|----------|----------|
|  | CRU | kg   | 0  | 0  | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
|  | MFR | kg   | 0  | 0  | 0,00E+00 | 1,74E+00 | 0,00E+00 | 0,00E+00 |
|  | MER | kg   | 0  | 0  | 0,00E+00 | 7,11E+00 | 0,00E+00 | 0,00E+00 |
|  | EEE | MJ   | 0  | 0  | 0,00E+00 | 1,52E+00 | 0,00E+00 | 0,00E+00 |
|  | EET | MJ   | 0  | 0  | 0,00E+00 | 2,29E+01 | 0,00E+00 | 0,00E+00 |

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

\*Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

| Biogenic Carbon Content                           |      |                     |
|---|------|---------------------|
| Indicator   | Unit | At the factory gate |
| Biogenic carbon content in product                | kg C | 8,45E-01            |
| Biogenic carbon content in accompanying packaging | kg C | 1,01E+00            |

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## Additional requirements

### Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

| Electricity mix           | Source        | Amount | Unit                      |
|---------------------------|---------------|--------|---------------------------|
| Electricity, Sweden (kWh) | ecoinvent 3.6 | 54,94  | g CO <sub>2</sub> -eq/kWh |

### Dangerous substances

The product contains no substances given by the REACH Candidate list.

### Indoor environment

## Additional Environmental Information

### Key Environmental Indicators

| Key environmental indicators | Unit                   | A1-A3  | A4    | A1-C4  | A1-D   |
|------------------------------|------------------------|--------|-------|--------|--------|
| GWPtotal                     | kg CO <sub>2</sub> -eq | 23,85  | 0,84  | 31,96  | 29,90  |
| Total energy consumption     | MJ                     | 773,91 | 12,98 | 790,03 | 761,04 |
| Amount of recycled materials | %                      | 8,20   |       |        |        |

### Additional environmental impact indicators required in NPCR Part A for construction products

| Indicator | Unit                   | A1-A3    | A4       | A5       | B2       | B3 |
|-----------|------------------------|----------|----------|----------|----------|----|
| GWPIOBC   | kg CO <sub>2</sub> -eq | 4,35E+01 | 8,45E-01 | 4,69E-02 | 6,32E-04 | 0  |

| Indicator | Unit                   | B4 | C1 | C2       | C3       | C4       | D         |
|-----------|------------------------|----|----|----------|----------|----------|-----------|
| GWPIOBC   | kg CO <sub>2</sub> -eq | 0  | 0  | 7,71E-02 | 2,49E-01 | 3,77E-02 | -3,00E+00 |

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

### Variants and Options

#### Key environmental indicators (A1-A3) for variants of this EPD

| Variants                        | Weight (kg) | GWPtotal (kg CO <sub>2</sub> -eq) | Total energy consumption (MJ) | Amount of recycled materials (%) |
|---------------------------------|-------------|-----------------------------------|-------------------------------|----------------------------------|
| S70-3 barstool upholstered seat | 8,91        | 40,60                             | 803,68                        | 17,07                            |

