# ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025 and EN 15804

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|---|---|
| Declaration holder | Dorma Beschlagtechnik GmbH |
| Publisher | Institut Bauen und Umwelt (IBU) |
| Programme holder | Institut Bauen und Umwelt (IBU) |
| Declaration number | EPD-DOR-2012311-E |
| Issue date | 18.12.2012 |
| Validity | 17.12.2017 |

## OGRO Window Handles

# DORMA Beschlagtechnik GmbH

www.bau-umwelt.com

# 1 General information

| DORMA Beschlagtechnik GmbH | OGRO Window Handles |
|---|---|
| **Programme holder**<br>IBU - Institut Bauen und Umwelt e.V.<br>Panoramastr. 1<br>D-10178 Berlin | **Holder of the Declaration**<br>DORMA Beschlagtechnik GmbH<br>Donnenberger Straße 2<br>D-42553 Velbert |
| **Declaration number**<br>EPD-DOR-2012311-E | **Declared product/unit**<br>The Declaration is based on 1 (one) OGRO window handle in stainless steel and aluminium with the "4100 SO" product designation weighing (incl. packaging materials) 218 g (stainless steel) and 268 g (aluminium). The fitting and LCA results are representative for all DORMA OGRO window handles in the respective design. |
| **This Declaration is based on the Product Category Rules:**<br>Locks and fittings 12.07.2012<br>(PCR-tested and approved by the independent expert committee (SVA)) | **Area or applicability**<br>The Life Cycle Assessment is based on data recorded at the production facility in Velbert, Germany during the period January to June 2012. The owner of the Declaration is liable for the information and requisite evidence on which it is based. |
| **Issue date**<br>18.12.2012 | |
| **Valid until**<br>17.12.2017 | **Verification**<br>The CEN EN 15804 standard serves as the core PCR.<br>Verification of the EPD by an independent third party in accordance with ISO 14025<br>☐ internally ☒ externally |
| Prof. Dr.-Ing. Horst J. Bossenmayer<br>(President of Institut Bauen und Umwelt e.V.) | |
| Prof. Dr.-Ing. Hans-Wolf Reinhardt<br>(Chairman of the Expert Committee (SVA)) | Dr.-Ing. Wolfram Trinius<br>(Independent verifier appointed by the SVA) |

# 2 Product

## 2.1 Product description

DORMA Beschlagtechnik GmbH manufactures door and window fittings made of aluminium and stainless steel for the OGRO segment. This Declaration refers to OGRO window handles in both types of material.

**DORMA OGRO product features:**

**Compatibility**

All of the models selected from the OGRO window handle range can also be supplied as door handles.

**Appearance**

Like the door handles, OGRO window handles have a uniform installation height of 9 mm. Accordingly, they comply with the DORMA demand on contemporary fittings in high-quality buildings.

**Technology**

- All DORMA OGRO window handles correspond with the DIN 18267-FG for clickable window handles.
- DORMA OGRO window handles are pre-adjusted to 35 mm as standard; for windows in accordance with the standard for energy-saving windows to EnEV 2009.
- Pin projection can be adapted variably and infinitely from 20 to 40 mm on site.
- All window handle models feature a high-quality Satino surface.
- New stable bearing with extra-long guide
- Easy and fast assembly as the underside of the window handle module lies flat on the profile or wooden surface

## 2.2 Application

DORMA OGRO Window Handles are suitable for practically all applications:

- for use on wooden, plastic or aluminium profiles
- for high public traffic and high strains on the building

## 2.3 Technical data

The following test standards are of relevance for the product:

- DIN 18267 – 2005 – 01 Window Handles: Clickable and Lockable Window Handles
- DIN 17440: Steel and Steel Alloys
- DIN EN 1670: Building Hardware – Corrosion Resistance – Requirements and Test Methods

## 2.4 Placing on the market / Application rules

Window handles are used for operating the tilt-and-turn action in wooden, aluminium and plastic window frames and are usually mounted using two screws spaced 43 mm apart on the corresponding window sash.

The window handles must be mounted by trained personnel in accordance with the instructions included in the scope of delivery and taking consideration of the statutory requirements and guidelines.

The DIN 18267 test standard: Clickable and Lockable Window Handles is of relevance for the product.

## 2.5 Delivery status

1 representative window handle including the packaging materials weighs:

- Stainless steel = 218 g
- Aluminium = 268 g

## 2.6 Base materials / Auxiliaries

The following table lists the components of 1 window handle (excl. packaging materials) as mass percentages on delivery.

**Stainless steel**

| Components | Percentage [M-%] |
|---|---|
| Stainless steel | 82% |
| Steel | 10% |
| Plastic | 8% |
| **TOTAL** | **100%** |

**Aluminium**

| Components | Percentage [M-%] |
|---|---|
| Aluminium | 86% |
| Steel | 8% |
| Plastic | 6% |
| **TOTAL** | **100%** |

## 2.7 Manufacture

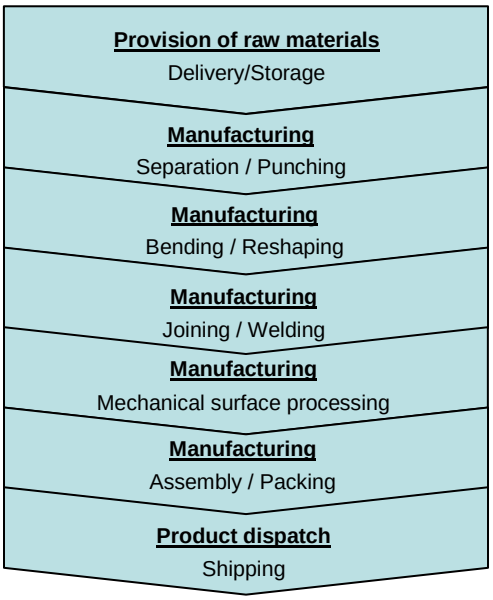
**Stainless steel**

The stainless steel window handles are generally manufactured from tubular material. The requisite shapes are achieved by bending or welding. A sheet metal / turned part is welded to one end and a turned and/or investment-cast part is welded to the other end.

The rosettes are manufactured from stainless steel sheeting in a punching and reshaping process.

The surface of the stainless steel window handles and rosettes is generated in various grinding processes.

Grinding is followed by mounting the stainless steel window handles in accordance with customer requirements before packing them individually or in groups.




**Aluminium**

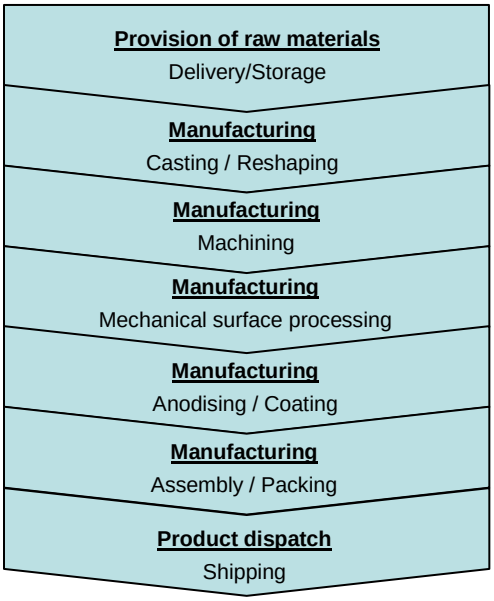
The aluminium window handles are manufactured as female parts in a die gravity casting process. Various mechanical machining processes are carried out for manufacturing the functional areas and the visible areas prepared for the next stage which involves grinding.

The rosettes are manufactured from aluminium sheeting in a punching and reshaping process.

The surface of the aluminium window handles and rosettes is prepared for the subsequent anodising process in various grinding processes.

The anodising process attributes the surface its natural colour. Alternatively, the fitting components can be dyed to customer requirements during anodising or powder-coated in colour afterwards.

Anodising is followed by packing the aluminium window handles individually or in groups in accordance with customer requirements.



### 2.8 Environment and health during manufacturing

DORMA Beschlagtechnik GmbH is certified in accordance with the DIN ISO 9001 / DIN EN ISO 14001 standards.

**Air**

Waste air generated during production is cleaned in accordance with statutory specifications. Emissions are significantly lower than the limit values specified by the TA Luft.

**Noise**

Sound protection analyses have established that all values communicated inside and outside the production facilities comply with statutory guidelines.

### 2.9 Product processing/installation

The general rules of technology are maintained and permanently improved in the areas of health and safety and environment protection.

### 2.10 Packaging

The fittings are supplied in PE bags in individual or collective packaging using modular packaging made of corrugated cardboard.

### 2.11 Condition of use

No material impact relationships are known during use and can therefore be excluded.

### 2.12 Environment and health during use

There are no impact relationships between the product, the environment and health. The product does not contain any harmful substances. Accordingly, emissions can be excluded.

### 2.13 Reference service life

The window handles have been designed in accordance with the relevant standards and guidelines and comply with the statutory warranty requirements.

The reference service life for simple fittings ≥ 50 years (BBSR 2011).

### 2.14 Extraordinary effects

**Fire**

There are no approvals to the fire protection standard for window handles. Fire-protection windows are closed securely without any possibility of being opened using the window handle.

**Water**

No contamination of water or soil. Production-related waste water is treated in-house.

**Mechanical destruction**

There are no impacts on the environment in the event of unforeseen mechanical destruction.

### 2.15 Reuse phase

The product system displays the following possibilities of reuse:

**Reuse**

It is possible to replace individual components as required.

**Material recycling**

The metal components in the window handles can be redirected to the raw materials cycle by means of separate recycling.

**Energy recovery**

The plastic components and packaging materials can be directed to the MVA route taking consideration of national guidelines.

**Landfilling**

As the product does not contain any substances which are hazardous to the environment or human health, the entire system can be landfilled without reservation where no other waste recovery technologies are in place.

### 2.16 Disposal

**Packaging**

The packaging materials must be disposed of in accordance with the national packaging directive:

- EAK 15 01 01 Paper and cardboard packaging
- EAK 15 01 02 Plastic packaging

**Disposal phase**

All materials are directed to energy or metallurgical recovery in line with any waste technology available:

- EAK 17 02 03 Plastic
- EAK 17 04 02 Aluminium
- EAK 17 04 05 Iron and steel

### 2.17 Further information

More information on technical data and other product variants is available from the following contacts:

DORMA Beschlagtechnik GmbH
Donnenberger Straße 2
D-42553 Velbert

E-mail: info@dorma.de
Web: www.dorma-beschlagtechnik.de

## 3 LCA: Calculation rules

### 3.1 Declared unit

The Declaration is based on 1 (one) OGRO window handle in stainless steel and aluminium with the "4100 SO" product designation weighing (incl. packaging materials) 218 g (stainless steel) and 268 g (aluminium). The fitting and LCA results are representative for all DORMA OGRO window handles in the respective design.

### 3.2 System limits

Type of EPD: cradle to gate (with options)

In accordance with EN 15804, the following modules are taken into consideration:

**Product stage: A1 – A3**

The extraction and preparation of raw materials including all of the corresponding upstream chains as well as the provision of electricity, steam and heat from primary energy resources including the extraction, refinement and transport thereof, and the requisite procurement transport to the plant gate

and the manufacturing of packaging are considered in these modules.

**Construction stage: A4 – A5**

These modules comprise the average distribution routes as well as energy recovery associated with the packaging materials.

**Disposal stage: C2 – C3**

These modules take consideration of transport to the recycling plant as well as the expenses incurred by collection, preparation and recycling.

**Credits: D**

The value streams incurred for a downstream product system based on material recycling processes as well as energy recovery are indicated in this module.

The Life Cycle Assessment was drawn up for Germany as a reference area. This means that apart from the production processes under these marginal conditions, the pre-stages also of relevance for Germany such as provision of electricity or energy carriers were used.

### 3.3 Estimates and assumptions

The most realistic data records were selected.

The distribution countries were recorded proportionately (A4). The collective loss of packaging materials (A5) and the product system at the End of Life (C3) is considered as 5%. The distance from the demolition site to the disposal site (C2) is estimated at 75 km.

### 3.4 Cut-off criteria

All of the data from the operational data survey and all emission measurements available for the period referred to in section 3.7 were taken into consideration. Furthermore, the data pertaining to transport expenses was recorded and modelled for all inputs considered.

The infrastructure (especially machines and production plants) used in the manufacturing processes were not taken into consideration in the analysis. Nor were the transport expenses incurred for packaging taken into consideration. Furthermore, varnishes were not taken into consideration on account of their low mass percentage of < 1%.

It can be assumed that the total of all neglected percentage shares does not exceed 5% in the impact categories and is therefore of subordinate significance.

### 3.5 Background data

The current version 5 of the software system for comprehensive analysis (GaBi) was used for modelling the life cycle. All of the background data used was taken from the current versions of various GaBi data bases and the ecoinvent data base (version 2.2). The data items contained in the data bases are documented online.

The Life Cycle Assessment was drawn up for Germany as a reference area. This means that apart from the production processes under these marginal conditions, the pre-stages also of relevance for Germany such as provision of electricity or energy carriers were used.

The secondary and recycling percentages can only be taken into consideration via the generic data records.

### 3.6 Data quality

Data was collated on the basis of evaluations of internal production and environmental data, recording LCA-relevant data within the supplier chain and by measuring the relevant data for the provision of energy. The data collated from operating data records and measurements has been examined for plausibility. Very good data representativity can be assumed after detailed examination.

The data records used for the LCA are generally no more than 10 years old.

### 3.7 Period under review

The data on which the LCA is based was collated representatively for the period from January to June 2012.

### 3.8 Allocation

There are no co-products in place. Individual products are manufactured within the framework of the production process.

### 3.9 Comparability

As a general rule, a comparison or evaluation of EPD data is only possible when all of the data to be compared has been drawn up in accordance with EN 15804 and the building context or product-specific characteristics are taken into consideration.

# 4 LCA: Scenarios and additional technical information

**Transport to the site (A4)**

| | |
|---|---|
| Litres of fuel | GLO: Truck PE |
| Transport distance | 639.26 km |
| Use of capacity (including empty runs) | 85% |

*All of the distribution countries were recorded proportionately when establishing the transport distance. Transport to the site is depicted with the corresponding fuel data records.*

**Installation in the building (A5)**

| | |
|---|---|
| Output materials incurred by waste treatment on site: | |
| OGRO stainless steel: Packaging materials | 18.7 g |
| OGRO aluminium: Packaging materials | 18.7 g |

*Details as waste potential: A collective loss of 5% is considered in the LCA results. Transport is allocated to Module C2.*

**Reference service life**

| | |
|---|---|
| Reference service life | ≥ 50 years (BBSR 2011) |

**End of Life (C1-C4)**

| | |
|---|---|
| <u>OGRO stainless steel:</u> | |
| For recycling | 184.5 g |
| For energy recovery | 15.0 g |
| <u>OGRO aluminium:</u> | |
| For recycling | 234.5 g |
| For energy recovery | 15.0 g |

*Details as waste potential: A collective loss of 5% is considered in the LCA results.*

**Disposal transport (C2)**

| | |
|---|---|
| Means of transport: | Truck<br>17.3 t useful load, Euro 3, freight |
| Transport distance: | 75 km |
| Use of capacity (including empty runs) | 50% |

**Reuse, recovery and recycling potential (D)**

Metal is directed to materials recycling while plastic and packaging materials are directed to energy recovery. The ensuing credits are allocated to Module D.

# 5 LCA: Results

| SYSTEM LIMITS (X = INCLUDED IN THE LCA; MND = MODULE NOT DECLARED) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PRODUCT STAGE | | | CONSTRUC-TION PROCESS STAGE | | USE STAGE | | | | | | | END OF LIFE STAGE | | | | BENEFITS AND LOADS BE-YOND THE SYSTEM BOUNDARYS |
| Raw material supply | Transport | Manufacturing | Transport | Construction-installation process | Raw material supply | Transport | Manufacturing | Transport | Construction-installation process | Raw material supply | Transport | Manufacturing | Transport | Construction-installation process | Raw material supply | Transport |
| **A1** | **A2** | **A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| X | X | X | X | X | MND | MND | MND | MND | MND | MND | MND | MND | X | X | MND | X |

| Parameter | Unit | A1-A3 | A4 | A5 | C2 | C3 | D |
|---|---|---|---|---|---|---|---|
| **ENVIRONMENTAL IMPACTS: 1 OGRO stainless steel window handle** | | | | | | | |
| Global Warming Potential | [kg $CO_2$ equiv.] | 9.96E-01 | 8.33E-03 | 1.56E-02 | 1.33E-03 | 3.31E-02 | -9.52E-01 |
| Ozone Depletion Potential | [kg CFC11 equiv.] | -6.50E-10 | 3.09E-12 | 1.14E-11 | 4.94E-13 | 6.25E-12 | 9.35E-12 |
| Soil and Water Acidification Potential | [kg $SO_2$ equiv.] | 5.32E-03 | 5.37E-05 | -3.69E-06 | 8.65E-06 | 2.78E-05 | -9.07E-03 |
| Eutrification Potential | [kg $PO_4^{3-}$ equiv.] | 3.57E-04 | 1.29E-05 | -3.19E-07 | 2.08E-06 | 7.16E-06 | -5.13E-04 |
| Photochemical Ozone Creation Potential | [kg ethene equiv.] | 4.23E-04 | -2.18E-05 | -1.36E-06 | -3.50E-06 | 1.72E-06 | -5.04E-04 |
| Abiotic Depletion Potential non-Fossil Resources | [kg Sb equiv.] | 4.10E-04 | 3.29E-10 | -1.65E-10 | 5.26E-11 | 2.39E-10 | -7.64E-05 |
| Abiotic Depletion Potential Fossil Fuels | [MJ] | 1.19E+01 | 1.15E-01 | -2.00E-01 | 1.84E-02 | 1.09E-02 | -1.26E+01 |
| **USE OF RESOURCES: 1 OGRO stainless steel window handle** | | | | | | | |
| Primary energy, renewable | [MJ] | 9.73E-01 | 4.51E-03 | 6.80E-04 | 7.21E-04 | 4.15E-04 | 3.29E-03 |
| Primary energy, renewable, for material use | [MJ] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total renewable primary energy | [MJ] | 9.73E-01 | 4.51E-03 | 6.80E-04 | 7.21E-04 | 4.15E-04 | 3.29E-03 |
| Primary energy, non-renewable | [MJ] | 1.27E+01 | 1.16E-01 | -1.99E-01 | 1.85E-02 | 1.18E-02 | -1.26E+01 |
| Primary energy, non-renewable, for material use | [MJ] | 1.35E-09 | 1.35E-09 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total non-renewable primary energy | [MJ] | 8.85E-01 | 1.27E+01 | 1.16E-01 | -1.99E-01 | 1.85E-02 | 1.18E-02 |
| Use of secondary materials | [kg] | 3.88E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Renewable secondary fuels | [MJ] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Non-renewable secondary fuels | [MJ] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of fresh water resources | [m³] | - | - | - | - | - | - |
| **OUTPUT FLOWS AND WASTE CATEGORIES: 1 OGRO stainless steel window handle** | | | | | | | |
| Hazardous waste for landfilling | [kg] | - | - | - | - | - | - |
| Disposed of, non-hazardous waste | [kg] | - | - | - | - | - | - |
| Disposed of, radioactive waste | [kg] | - | - | - | - | - | - |
| Components for reuse | [kg] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Materials for recycling | [kg] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.85E-01 | 0.00E+00 |
| Materials for energy recovery | [kg] | 0.00E+00 | 0.00E+00 | 1.87E-02 | 0.00E+00 | 1.50E-02 | 0.00E+00 |
| Exported energy [electricity] | [MJ] | 0.00E+00 | 0.00E+00 | 3.96E-02 | 0.00E+00 | 3.88E-02 | 0.00E+00 |
| Exported energy [thermal energy] | [MJ] | 0.00E+00 | 0.00E+00 | 1.11E-01 | 0.00E+00 | 1.05E-01 | 0.00E+00 |
| **Parameter** | **Unit** | **A1-A3** | **A4** | **A5** | **C2** | **C3** | **D** |
| **ENVIRONMENTAL IMPACTS: 1 OGRO aluminium window handle** | | | | | | | |
| Global Warming Potential | [kg $CO_2$ equiv.] | 1.67E+00 | 1.02E-02 | 1.56E-02 | 1.60E-03 | 1.26E-01 | -1.86E+00 |
| Ozone Depletion Potential | [kg CFC11 equiv.] | 8.24E-08 | 3.80E-12 | 1.14E-11 | 5.94E-13 | 4.58E-09 | -1.91E-07 |
| Soil and Water Acidification Potential | [kg $SO_2$ equiv.] | 4.48E-03 | 6.60E-05 | -3.69E-06 | 1.04E-05 | 2.37E-04 | -8.85E-03 |
| Eutrification Potential | [kg $PO_4^{3-}$ equiv.] | 5.07E-04 | 1.59E-05 | -3.19E-07 | 2.50E-06 | 2.27E-05 | -3.77E-04 |
| Photochemical Ozone Creation Potential | [kg ethene equiv.] | 4.19E-04 | -2.68E-05 | -1.36E-06 | -4.21E-06 | 1.72E-05 | -5.08E-04 |
| Abiotic Depletion Potential non-Fossil Resources | [kg Sb equiv.] | 8.04E-07 | 4.04E-10 | -1.65E-10 | 6.32E-11 | 3.95E-08 | -7.69E-07 |
| Abiotic Depletion Potential Fossil Fuels | [MJ] | 2.29E+01 | 1.41E-01 | -2.00E-01 | 2.21E-02 | 1.11E+00 | -1.75E+01 |
| **USE OF RESOURCES: 1 OGRO aluminium window handle** | | | | | | | |
| Primary energy, renewable | [MJ] | 2.99E+00 | 5.54E-03 | 6.80E-04 | 8.67E-04 | 5.44E-02 | -7.76E+00 |
| Primary energy, renewable, for material use | [MJ] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total renewable primary energy | [MJ] | 2.99E+00 | 5.54E-03 | 6.80E-04 | 8.67E-04 | 5.44E-02 | -7.76E+00 |
| Primary energy, non-renewable | [MJ] | 2.65E+01 | 1.42E-01 | -1.99E-01 | 2.22E-02 | 1.37E+00 | -2.45E+01 |
| Primary energy, non-renewable, for material use | [MJ] | 5.21E-06 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.36E-11 | -1.30E-09 |
| Total non-renewable primary energy | [MJ] | 5.21E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.36E-11 | -1.30E-09 |
| Use of secondary materials | [kg] | 3.42E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Renewable secondary fuels | [MJ] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Non-renewable secondary fuels | [MJ] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of fresh water resources | [m³] | - | - | - | - | - | - |
| **OUTPUT FLOWS AND WASTE CATEGORIES: 1 OGRO aluminium window handle** | | | | | | | |
| Hazardous waste for landfilling | [kg] | - | - | - | - | - | - |
| Disposed of, non-hazardous waste | [kg] | - | - | - | - | - | - |
| Disposed of, radioactive waste | [kg] | - | - | - | - | - | - |
| Components for reuse | [kg] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Materials for recycling | [kg] | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.35E-01 | 0.00E+00 |
| Materials for energy recovery | [kg] | 0.00E+00 | 0.00E+00 | 1.87E-02 | 0.00E+00 | 1.50E-02 | 0.00E+00 |
| Exported energy [electricity] | [MJ] | 0.00E+00 | 0.00E+00 | 3.96E-02 | 0.00E+00 | 3.88E-02 | 0.00E+00 |
| Exported energy [thermal energy] | [MJ] | 0.00E+00 | 0.00E+00 | 1.11E-01 | 0.00E+00 | 1.31E-03 | 0.00E+00 |

# 6 LCA: Interpretation

The analysis was evaluated using relative values for the dominance analysis and the minimum threshold value specified as 10%.

**OGRO stainless steel**

In all of the impact categories to CML 2001 Nov. 2010, the extraction of raw materials is considered to be the most dominant phase in the entire life cycle of the product system. Analogue to the Life Cycle Inventory Analysis (92 percentage mass of steel components), this can be attributed to the extraction of raw materials and upstream chains in steel production.

Accounting for a mass percentage of 8%, the plastic components and transport processes are of subordinate significance in terms of their environmental impact. The same applies to the use of green electricity during manufacturing.

One positive outcome is represented by the high credits in the raw materials extraction phase in terms of the Ozone Depletion Potential (ODP). This is attributable to the recycling share accounted for by the steel components.

The steel components and/or their upstream chains dominate primary energy requirements.

**OGRO aluminium**

In all of the impact categories to CML 2001 Nov. 2010, the extraction of raw materials is considered to be the most dominant phase in the entire life cycle of the product system. Analogue to the Life Cycle Inventory Analysis, this can be attributed to the high percentage of metallurgical components (86 percentage mass accounted for by aluminium and 8% by steel) as well as the extraction of raw materials and upstream production associated with them.

Accounting for a mass percentage of 6%, the plastic components and transport processes are of subordinate significance in terms of their environmental impact. The same applies to the use of green electricity during manufacturing. During the manufacturing phase, the anodising process is clearly distinguishable as a hot spot.

The aluminium and steel components and/or their upstream chains dominate primary energy requirements.

Comments

At its last meeting on 4 October 2012, the Expert Committee (SVA) at IBU clearly defined the rules for calculating the declaration of waste. The data from the data bases on which the background data used is based must therefore be revised. Accordingly, this Environmental Product Declaration complies with the interim solution approved by the SVA and is generated without a waste declaration.

Likewise, the background data used does not indicate the use of fresh water resources. The Declaration is therefore issued without any values pertaining to fresh water.

# 7 Requisite evidence

This Environmental Product Declaration does not require any evidence in relation to the material composition in the product and its area of application.

# 8 References


**Institute Construction and Environment e.V., Berlin (Ed.):**

**General Principles** for the EPD Programme of the Institute Construction and Environment e.V., 2011-06

**Product Category Rules for Construction Products**

**Part A:** Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report, 2011-07

**Part B:** Requirements on the EPD for locks and fittings, 2012-07

www.bau-umwelt.com

**2001/118/EC**: European Waste Catalogue (EWC) – Decision by the Commission on 16 January 2001 amending the 2000/532/EC decision on a waste index.

**BBSR**: Useful lives of components for life cycle assessments in accordance with the evaluation system for sustainable buildings (BNB), 2011

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**Publisher**
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