# ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

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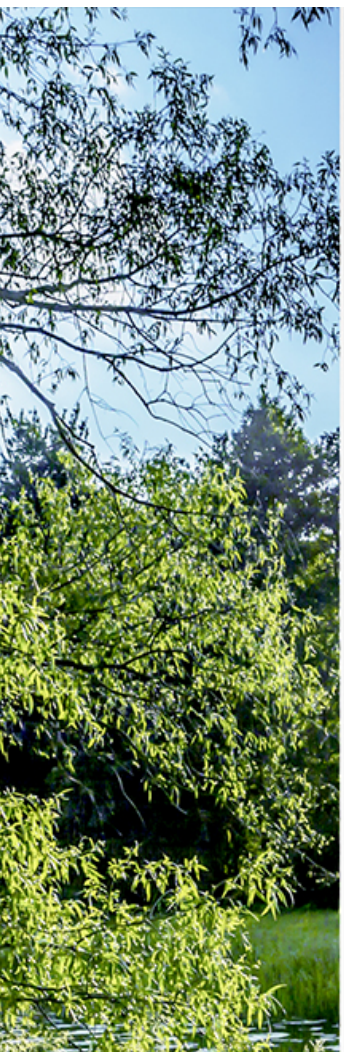
|---|---|
| Owner of the Declaration | **OGRO Beschlagtechnik GmbH** |
| Programme holder | Institut Bauen und Umwelt e.V. (IBU) |
| Publisher | Institut Bauen und Umwelt e.V. (IBU) |
| Declaration number | EPD-OGR-20170198-IBA1-EN |
| Issue date | 08.01.2018 |
| Valid to | 07.01.2024 |

## Door handles

## OGRO Beschlagtechnik GmbH

Institut Bauen und Umwelt e.V.

**www.ibu-epd.com / https://epd-online.com**



# 1. General Information

## OGRO Beschlagtechnik GmbH

**Programme holder**
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

**Declaration number**
EPD-OGR-20170198-IBA1-EN

**This Declaration is based on the Product Category Rules:**
Building Hardware products, 02.2016
(PCR tested and approved by the SVR)

**Issue date**
08.01.2018

**Valid to**
07.01.2024

Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)

Dr. Burkhart Lehmann
(Managing Director IBU)

## Door handles

**Owner of the Declaration**
OGRO Beschlagtechnik GmbH
Donnenberger Straße 2
42553 Velbert
Germany

**Declared product / Declared unit**
The declared unit is one (1 piece) average door handle fitting in the OGRO Premium and CORE series, including packaging materials.
The average fitting including packaging weighs 697.6 g.

**Scope:**
This Declaration is based on the average weighted by sales figures and covers both the aluminium and stainless steel variants as well as the design for full-leaf doors (VB) and section doors (PB).
As a top seller, the 8100 door handle model represents the basis for calculating the representative LCA. Both of the following product variants in stainless steel and aluminium are reviewed:

OGRO Premium / CORE
- Door handle model 8100
- Door handle rosette model 6501
- Key rosette model 6612 with profile cylinder hole (PZ)

OGRO Premium / CORE
- Door handle model 8100
- Key rosette model 6621 with profile cylinder hole (PZ)

The LCA is based on data recorded for the period May to October 2017 at the production facility in Velbert, Germany.
This document is translated from the German Environmental Product Declaration into English. It is based on the German original version EPD-OGR-20170198-IBA1-DE. The verifier has no influence on the quality of the translation.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

**Verification**

| |
|---|
| The CEN Norm /EN 15804/ serves as the core PCR |
| Independent verification of the declaration according to /ISO 14025/ |
| ☐ internally ☒ externally |

Matthias Klingler
(Independent verifier appointed by SVR)

# 2. Product

## 2.1 Product description / Product definition

OGRO Beschlagtechnik GmbH manufactures door and window fittings made of stainless steel or aluminium for the premium real estate market. This Declaration concerns OGRO Premium and CORE door handle fittings in both types of material.

**Door handle product features:**

**Combinability**
The modular system permits flexible combinability of individual components.

**Bases**
The bases ensure reliable transfer of high forces to the door leaf, thereby relieving the fitting and lock.

**Slide bearing**
The maintenance-free slide bearing reliably absorbs tilting pressure and traction and relieves the locking mechanism.

**Click & go assembly**
Four click elements permit fast assembly as the handle easily clicks into place. The door handles are stationary/pivoted.

**Retaining springs**
Four retaining springs ensure that the door handles remain horizontal when subject to extensive use. The fittings can be mounted on the right or left.

**Extended support cams**
Thanks to extended support cams on the thread side, door thickness intervals of min. 15 mm can be covered with a screw/pin combination for full-leaf rosettes and plates.

**Screwed through connection**
The secure continuous screws (M5) generate a stable connection between rosette or plate pairs in full-leaf doors.

This is a CPR product with hEN/: Directive (EU) No. 305/2011 /CPR/ applies for placing the door handle fitting on the market in the EU/EFTA (with the exception of Switzerland). The product requires a Declaration of Performance taking consideration of the /DIN EN 179 2008/ Locks and fittings standard, and CE marking.

Use is governed by the respective national regulations.

## 2.2 Application

The door fittings are suitable for practically all applications:

- For use on doors which are subject to frequent force, e.g. football stadiums, military barracks, schools, public toilets
- For extremely high-traffic areas and intensive use in buildings
- Use in public buildings, e.g. hospitals or administrative buildings
- Manifold barrier-free applications
- Use on glass doors
- Use on mechanically high-strength apartment entrance doors with requirements incl. in accordance with /DIN 18257/
- Use on panic, escape, rescue and fire safety doors
- Use on doors with electronic access control

## 2.3 Technical Data

The following test standards are of relevance for the product:

- /DIN 17440/: Steel and steel alloys
- /DIN EN 179/: Locks and fittings
- /DIN EN 1125/: Locks and fittings
- /DIN EN 1634/: Fire resistance and smoke control tests for door and shutter assemblies
- /DIN EN 1906/: Requirements and test methods for lever handles and knob furniture
- /DIN 18082, Part 1/: Fire protection barriers, steel doors T 30-1
- /DIN 18095, Parts 1 + 2/: Smoke control doors
- /DIN 18255/: Building hardware
- /DIN 18257/: Security plates
- /DIN 18273/: Lever handle units for fire doors and smoke control doors
- /DIN 4102, Parts 5 + 18/: Fire behaviour of building materials and building components
- /DIN 18040/: Construction of accessible buildings

This is a CPR product with hEN/: The product's performance values correspond with the Declaration of Performance in terms of its essential properties in accordance with DIN EN 179:2008 Building hardware - Emergency exit devices operated by a lever handle or push pad.

## 2.4 Delivery status

The fittings are packed individually or as multiples in PE bags for protection during transport and supplied in module packaging made of corrugated board.

## 2.5 Base materials / Ancillary materials

The average door handle fitting largely comprises metallic components and a small percentage of plastic. The material composition of one average door handle fitting (excl. packaging materials) is depicted in the following table as supplied in absolute mass and as a percentage by mass.

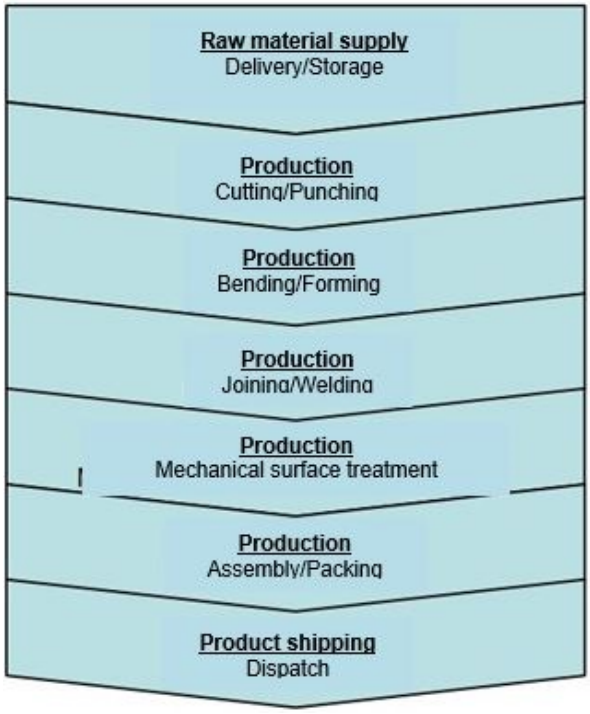
| Component | Mass | Percentage |
|---|---|---|
| Stainless steel | 0.3122 kg | 51% |
| Steel | 0.1599 kg | 26% |
| Aluminium | 0.0871 kg | 14% |
| Cast zinc | 0.0217 kg | 4% |
| Plastics | 0.0295 kg | 5% |
| **Total** | **0.6104 kg** | **100%** |

## 2.6 Manufacture

**Stainless steel**

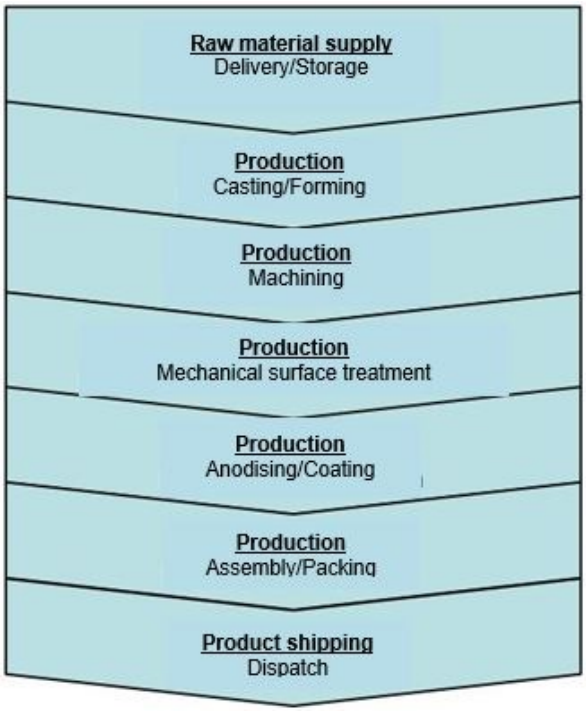
The stainless steel handles are usually manufactured from tubes. They are formed by bending or welding. A sheet metal / turned part is welded at one end and a turned and/or precision-cast part is welded at the other end.

The plates and rosettes are manufactured from stainless steel sheeting using a punching and forming process.
Various grinding steps prepare the surface of the stainless steel handles, plates and rosettes.
After grinding, the stainless steel handles are packed individually or as multiples along with the plates/rosettes and accessories in accordance with customer requirements.




**Aluminium**

The aluminium door handles are manufactured as hole components in a permanent mould gravity pouring process. Using various mechanical processing methods, the functional surfaces are manufactured and visible surfaces prepared for subsequent grinding.
The plates and rosettes are manufactured from aluminium sheeting using a punching and forming process.
Various grinding steps prepare the surface of the aluminium handles, plates and rosettes for the subsequent anodising process.




## 2.7 Environment and health during manufacturing

OGRO Beschlagtechnik GmbH is certified to /DIN ISO 9001/ and /DIN EN ISO 14001/.

**Air**

Waste air generated during production is cleaned in accordance with statutory specifications. Emissions are significantly lower than the limit values specified by the Technical Guidelines on Air Quality Control /TA Luft/.

**Noise**

Sound insulation measurements have indicated that all values recorded inside and outside the production facilities comply with statutory specifications.

## 2.8 Product processing/Installation

On account of the marking requirement and in order to avoid installation and/or application errors, each OGRO product is accompanied by assembly instructions for the specific product. These instructions outline how the product is to be secured to the door and how it should be used on an everyday basis. The up-to-date assembly instructions are included in the product packaging and can also be found in our download area. The current approval certificates, tender texts and general information such as catalogue drawings are also available in various formats in our download area.

## 2.9 Packaging

The fittings are packed individually or as multiples in PE bags for protection during transport and supplied in module packaging made of corrugated board.

## 2.10 Condition of use

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

## 2.11 Environment and health during use

There are no impact relations between the product, the environment and health during use. The product does

not contain any pollutants. Emissions can therefore be excluded.

### 2.12 Reference service life

In accordance with /DIN EN 1906/, an endurance test confirmed by the MPA and comprising up to 2,000,000 test cycles was carried out on the door handles.
This corresponds with a life cycle of approx. 80 years for an average door.

### 2.13 Extraordinary effects

**Fire**
In accordance with /DIN 18273/, the OGRO Premium / CORE fittings made of stainless steel and aluminium are classified as follows:

- OGRO Premium / CORE commercial fittings as per building material class B2 in accordance with /DIN 4102-1/ are regarded as “normally flammable”.
- OGRO Premium / CORE fire door fittings as per building material class A in accordance with /DIN 4102-1/ are regarded as “non-flammable”.

At temperatures in excess of 300 °C, small volumes of gas can be released.

**Fire protection**

| Name | Value |
|---|---|
| Building material class | A1 |
| Burning droplets | A0 |
| Smoke gas development | S1 |

**Water**
The door handle function is not impaired by contact with water.

**Mechanical destruction**
No environmental impact is known in the event of unforeseen mechanical destruction.

### 2.14 Re-use phase

The following re-use options arise for the product system:

**Re-use**
Individual components can be replaced as necessary.

**Material recycling**
The fitting components can be recycled separately and redirected to the recycling circuit.

**Energy recovery**
The plastic components and packaging materials can be directed to waste incineration taking consideration of national specifications.

**Landfilling**
As the product does not contain any substances which are hazardous to the environment or human health, the entire system can be landfilled in the absence of waste recycling Technologies.

### 2.15 Disposal

**Packaging**
The packaging materials must be disposed of in accordance with the national packaging ordinance:

- /EWC 15 01 01/ Paper and cardboard packaging
- /EWC 15 01 02/ Plastic packaging

**Disposal phase**
All materials are directed to energetic or metallurgical recycling in line with the available waste technology:

- /EWC 17 02 03/ Plastic
- /EWC 17 04 02/ Aluminium
- /EWC 17 04 05/ Iron and steel
- /EWC 17 04 04/ Zinc

### 2.16 Further information

Further information on technical data and other product variants can be obtained from the following sources:

OGRO Beschlagtechnik GmbH
Donnenberger Straße 2
42553 Velbert

Web: www.ogro.de

## 3. LCA: Calculation rules

### 3.1 Declared Unit

This Declaration refers to an average OGRO Premium and CORE door handle fitting, including packaging materials.
The average is weighted by sales figures and covers both the aluminium and stainless steel variants as well as the design for full-leaf doors (VB) and section doors (PB).
As a top seller, the 8100 door handle model represents the basis for calculating the representative LCA. Both of the following product variants in stainless steel and aluminium are reviewed:

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OGRO Premium / CORE

- Door handle model 8100
- Key rosette model 6621 with profile cylinder hole (PZ)

**Declared unit**

| Name | Value | Unit |
|---|---|---|
| Declared unit | 1 | piece/product |
| Product weight | 0.6104 | kg |
| Packaging materials | 0.0872 | kg |
| Mass of declared Product | 0.6976 | kg |

| | | |
|---|---|---|
| Conversion factor to 1 kg | 1.433 | - |

### 3.2 System boundary

Apart from production, this EPD also considers installation and disposal of the product. The Declaration is therefore from the "cradle to plant gate, with options".
The following modules are considered in accordance with EN 15804:

**Product stage (A1-A3):**
The extraction and processing of raw materials, including all of the corresponding upstream chains, provision of electricity, steam and heat from primary energy resources, including the extraction, refinement and transport thereof, as well as the requisite procurement transport to the plant gate and manufacturing of packaging, are considered in this module.

**Transport to site (A4):**
This module summarises the average distribution routes by truck and ship.

**Installation on site (A5):**
This module analyses the disposal of packaging incurred as waste during product installation.

**Transport to EoL (C2):**
This module analyses the average truck transports of product components for recycling and/or incineration.

**Waste processing (C3):**
This module considers the collection, processing and recycling efforts for materials during recycling or incineration.

**Re-use, recovery and recycling potential (D):**
The value streams arising from material recycling and energetic utilisation of the packaging materials (A5) and product components (C3) for a downstream product system are outlined in this module.

### 3.3 Estimates and assumptions

The most realistic data sets were selected.
The distribution countries accounting for the highest volumes were recorded proportionately (A4). To be on the safe side, a distance of 10,000 km per container ship was assumed for a remaining share of 4% of fittings sold.
A truck utilisation capacity (including empty runs) of 85% was assumed for transport to the site; a utilisation capacity of 48% was assumed for transport by ship.

Comprehensive collection of the packaging materials (A5) and the product system at the EoL (C3) without collection losses was assumed. The route from the demolition site to the disposal company (C2) is estimated at 75 km. A utilisation capacity (including empty runs) of 50% is assumed.

### 3.4 Cut-off criteria

All operating data was taken into consideration in Modules A1-A3. Accordingly, material flows have also been analysed with a mass percentage of less than 1%.
Plants, infrastructure and secondary and tertiary packaging required during manufacturing are not analysed.

### 3.5 Background data

The latest version 8.1 of the software system for comprehensive analysis /GaBi/ was used for modelling the life cycle. The production process was modelled using the manufacturer-specific data. Generic background data sets were used for the *upstream* and *downstream* processes. These were taken from the current version of the GaBi data base.

### 3.6 Data quality

The data on the products under review was recorded using analyses of internal production and environmental data, LCA-relevant data within the supplier chain and analyses of relevant data for the provision of energy. The data surveyed has been examined for plausibility and consistency. Good data representativity can be assumed.

Manufacturer-specific values were applied for calculating the secondary percentages in the analysis. No specific value was available for the cast zinc alloy used. Instead, the recycling percentages were applied from the GaBi data set used which is regarded as representative on account of the low mass percentage of die-cast zinc (3.1% of the average door handle including packaging).

The background data used for the assessment is not older than 10 years.

### 3.7 Period under review

The material and energy data on which the LCA is based was recorded between January and June 2012 at the production facility in Velbert, Germany, and updated and adapted to the current situation between May and October 2017.

### 3.8 Allocation

The material flows required for manufacturing the product system were compiled individually from the OGRO Beschlagtechnik GmbH ERP system. The requisite energy data was converted to the piece numbers produced using measurement data. Allocations in the LCA data sets used are documented accordingly in the data sets.

The potentials arising from energetic utilisation of the product and its packaging (Modules C3 and A5) are allocated to Module D.

### 3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.
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## 4. LCA: Scenarios and additional technical information

The following technical information forms the basis for the declared modules or can be used for developing specific scenarios within the context of a building assessment.

**Transport to the building site (A4)**

| Name | Value | Unit |
|---|---|---|
| Truck | - | |
| Diese consumption | 0.00873 | kg |
| Transport distance | 770 | km |
| Capacity utilisation (including empty runs) | 85 | % |
| Ship | - | |
| Crude oil consumption | 0.00108 | kg |
| Transport distance | 391 | km |
| Utilisation capacity | 48 | % |

**Installation into the building (A5)**

| Name | Value | Unit |
|---|---|---|
| Auxiliary | 0 | kg |
| Water consumption | 0 | $m^3$ |
| Other resources | 0 | kg |
| Electricity consumption | 0 | kWh |
| Other energy carriers | 0 | MJ |
| Material loss | 0 | kg |
| Output substances following waste treatment on site | 0.0872 | kg |
| Dust in the air | 0 | kg |
| VOC in the air | 0 | kg |

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

| Name | Value | Unit |
|---|---|---|
| Collected separately | 0.6104 | kg |
| Recycling | 0.5809 | kg |
| Waste incineration | 0.0295 | kg |

**Re-use, recovery and recycling potential (D), relevant scenario details**

Module D includes possible potentials from incineration processes for packaging waste (A5) and plastic components of the product as well as from material recycling of the metallic product components (C3). A waste incineration plant with an R1 value > 0.6 is assumed.

## 5. LCA: Results

The following tables depict the results of the indicators concerning the estimated impact, use of resources as well as waste and other output flows in relation to 1 door handle fitting manufactured by OGRO.

These results in the CML categories refer to potential environment impact over an analysis period of 100 years. Long-term emissions (> 100 years) are not taken into consideration in the estimated impact.
The characterisation factors of the /CML/ (Institute of Environmental Sciences, Faculty of Science, University of Leiden, The Netherlands), version 2001 - April 2013 are used.
Note: Impact estimate results are only relative statements which do not make any claims concerning the end points of the impact categories, exceeding threshold values or risks.

**DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)**

| PRODUCT STAGE | | | CONSTRUCTION PROCESS STAGE | | USE STAGE | | | | | | | END OF LIFE STAGE | | | | BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Raw material supply | Transport | Manufacturing | Transport from the gate to the site | 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 | MND | MNR | MNR | MNR | MND | MND | MND | X | X | MND | X |

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 door handle fitting**

| Parameter | Unit | A1-A3 | A4 | A5 | C2 | C3 | D |
|---|---|---|---|---|---|---|---|
| Global warming potential | [kg $CO_2$-Eq.] | 2.93E+0 | 3.44E-2 | 1.62E-1 | 3.83E-3 | 1.21E-1 | -1.55E+0 |
| Depletion potential of the stratospheric ozone layer | [kg CFC11-Eq.] | 1.15E-8 | 1.13E-14 | 3.47E-14 | 1.29E-15 | 7.27E-10 | -8.42E-9 |
| Acidification potential of land and water | [kg $SO_2$-Eq.] | 1.54E-2 | 1.90E-4 | 2.52E-5 | 1.00E-5 | 1.80E-4 | -5.50E-3 |
| Eutrophication potential | [kg $(PO_4)^{3-}$-Eq.] | 1.02E-3 | 2.92E-5 | 4.93E-6 | 2.41E-6 | 1.87E-5 | -3.40E-4 |
| Formation potential of tropospheric ozone photochemical oxidants | [kg ethene-Eq.] | 1.05E-3 | -1.73E-5 | 1.21E-6 | -3.44E-6 | 1.20E-5 | -5.42E-4 |
| Abiotic depletion potential for non-fossil resources | [kg Sb-Eq.] | 5.92E-4 | 2.56E-9 | 2.24E-9 | 3.08E-10 | 9.02E-8 | -6.75E-5 |
| Abiotic depletion potential for fossil resources | [MJ] | 3.53E+1 | 4.70E-1 | 3.94E-2 | 5.29E-2 | 8.82E-1 | -1.63E+1 |

**RESULTS OF THE LCA - RESOURCE USE: 1 door handle fitting**

| Parameter | Unit | A1-A3 | A4 | A5 | C2 | C3 | D |
|---|---|---|---|---|---|---|---|
| Renewable primary energy as energy carrier | [MJ] | 7.17E+0 | 2.14E-2 | 9.80E-1 | 2.66E-3 | 4.24E-2 | -3.94E+0 |
| Renewable primary energy resources as material utilization | [MJ] | 9.74E-1 | 0.00E+0 | -9.74E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| Total use of renewable primary energy resources | [MJ] | 8.14E+0 | 2.14E-2 | 5.90E-3 | 2.66E-3 | 4.24E-2 | -3.94E+0 |
| Non-renewable primary energy as energy carrier | [MJ] | 3.67E+1 | 4.71E-1 | 1.02E+0 | 5.31E-2 | 1.57E+0 | -1.82E+1 |
| Non-renewable primary energy as material utilization | [MJ] | 1.59E+0 | 0.00E+0 | -9.77E-1 | 0.00E+0 | -6.17E-1 | 0.00E+0 |
| Total use of non-renewable primary energy resources | [MJ] | 3.83E+1 | 4.71E-1 | 4.51E-2 | 5.31E-2 | 9.57E-1 | -1.82E+1 |
| Use of secondary material | [kg] | 6.20E-2 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 5.15E-1 |
| Use of renewable secondary fuels | [MJ] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| Use of non-renewable secondary fuels | [MJ] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| Use of net fresh water | [$m^3$] | 2.37E-2 | 3.96E-5 | 4.20E-4 | 4.93E-6 | 2.43E-4 | -1.46E-2 |

**RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 door handle fitting**

| Parameter | Unit | A1-A3 | A4 | A5 | C2 | C3 | D |
|---|---|---|---|---|---|---|---|
| Hazardous waste disposed | [kg] | 1.07E-6 | 2.22E-8 | 4.63E-10 | 2.79E-9 | 4.73E-10 | -4.38E-7 |
| Non-hazardous waste disposed | [kg] | 5.59E-1 | 3.26E-5 | 2.40E-3 | 4.06E-6 | 3.59E-2 | -1.35E-1 |
| Radioactive waste disposed | [kg] | 1.22E-3 | 6.37E-7 | 2.27E-6 | 7.24E-8 | 3.10E-5 | -8.45E-4 |
| Components for re-use | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| Materials for recycling | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 5.81E-1 | 0.00E+0 |
| Materials for energy recovery | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| Exported electrical energy | [MJ] | 0.00E+0 | 0.00E+0 | 2.50E-1 | 0.00E+0 | 8.51E-2 | 0.00E+0 |
| Exported thermal energy | [MJ] | 0.00E+0 | 0.00E+0 | 5.79E-1 | 0.00E+0 | 1.98E-1 | 0.00E+0 |

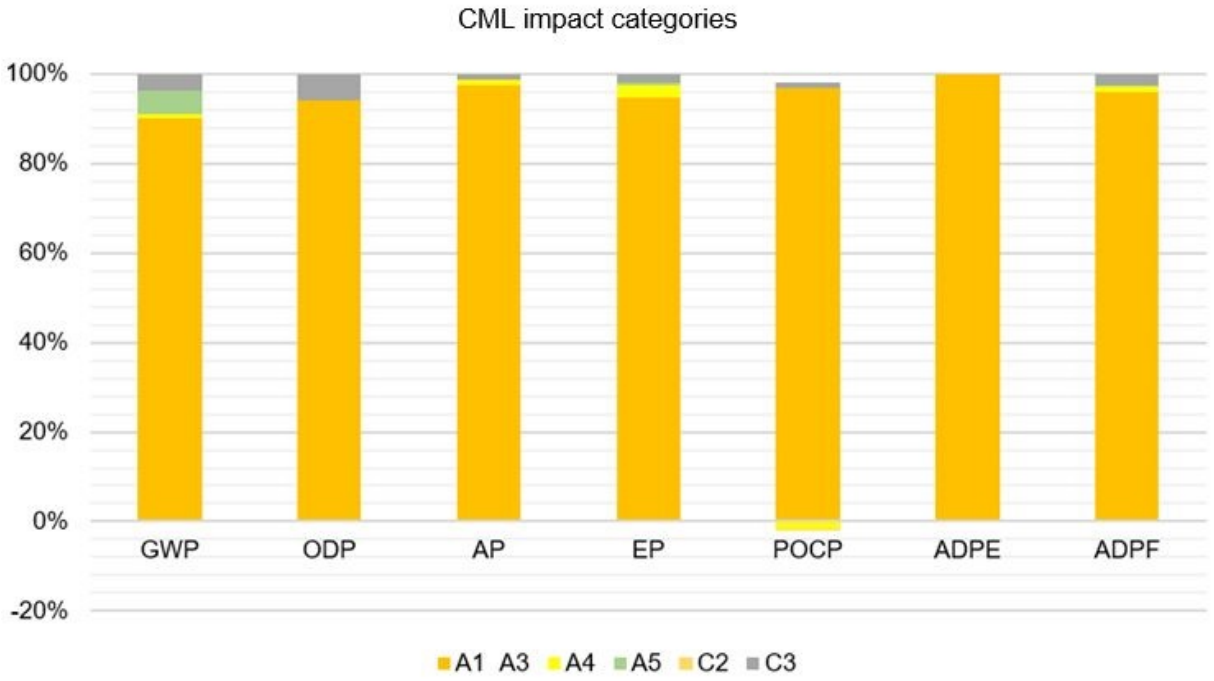
## 6. LCA: Interpretation

All impact categories are dominated by Modules A1-A3. This is due to the high percentage of metallurgical components, especially the extraction of stainless steel and aluminium, in accordance with the LCIA, and the associated upstream chains. The use of natural gas during the product stage also makes a particular contribution to the global warming potential (**GWP**).

The disposal of packaging materials (A5) makes a relevant contribution to the **GWP** but is irrelevant in the other indicators. The evaluation of the product components (C3) has a noticeable influence on the **GWP** and the ozone depletion potential (**ODP**).

The greatest loads attributable to distribution (A4) and disposal transport (C2) are caused in terms of the eutrification potential (**EP**). In relation to the remaining

modules, they are not however of significance in any category. The nitrogen monoxide emissions incurred during transport have a negative influence on the photochemical ozone creation potential (**POCP**), which leads to avoided loads.




## 7. Requisite evidence

This Environmental Product Declaration does not require any evidence relating to the material composition of the product and its area of applicability.

## 8. References


**Institut Bauen und Umwelt**
Institut Bauen und Umwelt e.V., Berlin (pub.): Generation of Environmental Product Declarations (EPDs);
**General Principles**
for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2015/10
www.ibu-epd.de

**/ISO 14025/**
DIN EN /ISO 14025:2011-10/, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

**/EN 15804/**
/EN 15804:2012-04+A1 2013/, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

**Product Category Rules for Building Products, Part A:** Calculation rules for the Life Cycle Assessment and requirements on the Background Report, version 1.6, 11/2017

**Product Category Rules for Building Products, Part B:** Requirements on the EPD for locks and fittings, version 1.0, 02/2016

**BBSR:** Service lives of components for Life Cycle Analyses in accordance with the evaluation system for sustainable building, 2017

**CML:**
LCIA characterisation factors by the Centrum voor Milieukunde (CML) at the University of Leiden, The Netherlands; version 2001 - April 2013

**CPR:2011-03-09:**
Directive of the European Parliament and Council on specifying harmonised conditions for marketing building products

**DIN 17440:** Steel and steel alloys

**DIN 18040:** Construction of accessible buildings - Design principles

**DIN 18082-1:1969:** Fire-resistant single-leaf steel doors (T 30-1 doors) – Dimensions and requirements

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**Publisher**
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