

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804




Owner of the Declaration	
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-DOR-20160073-IBA1-EN
Issue date	18.12.2012
Valid to	17.12.2017

OGRO Window Handles DORMA Beschlagtechnik GmbH in Aluminium

www.bau-umwelt.com / <https://epd-online.com>



1. General Information

DORMA Beschlagtechnik GmbH	OGRO Window Handles
Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	Owner of the Declaration DORMA Beschlagtechnik GmbH Donnenberger Straße 2 D-42553 Velbert
Declaration number EPD-DOR-20160073-IBA1-EN	Declared product / Declared unit OGRO Window Handles
This Declaration is based on the Product Category Rules: Building Hardware products, 07.2014 (PCR tested and approved by the SVR)	Scope: The Declaration is based on one OGRO window handle in aluminium as a reference with the model number 4100. The product designation in aluminium weighs incl. packaging materials 268 g. The fitting and LCA results are representative for all DORMA OGRO window handles in the respective design. 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.
Issue date 18.12.2012	Verification The CEN Norm /EN 15804/ serves as the core PCR Independent verification of the declaration according to /ISO 14025/ <input type="checkbox"/> internally <input checked="" type="checkbox"/> externally
Valid to 17.12.2017	
 Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)	 Dr.-Ing. Wolfram Trinius (Independent verifier appointed by SVR)
 Dr. Burkhard Lehmann (Managing Director IBU)	

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 aluminium.

DORMA OGRO product features:

Compatibility

All 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 preadjusted 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:

- Aluminium = 268 g

2.6 Base materials / Ancillary materials

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

Aluminium

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

2.7 Manufacture

Aluminium

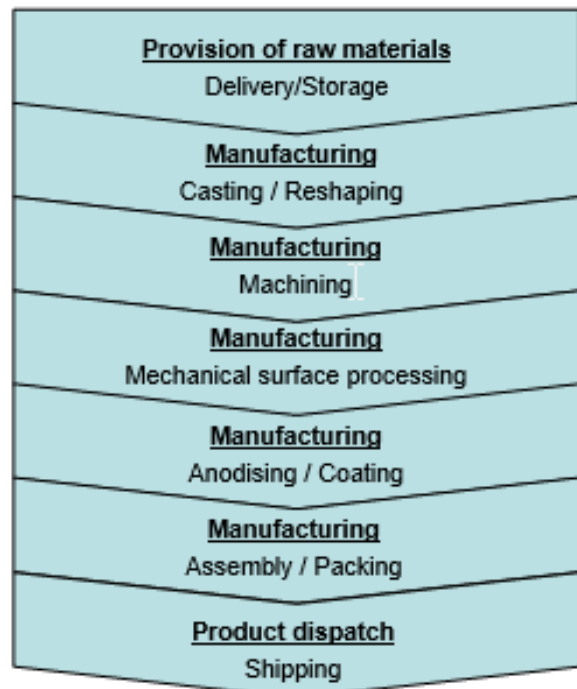
The aluminium window handles are manufactured as female parts in a die gravity casting process. Various mechanical machining processes are carried out for manufacturing the functional areas and the visible areas prepared for the next stage which involves grinding.

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 \geq 50 years (BBSR 2011).

Influences on ageing when applied in accordance with the rules of technology

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 Re-use 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 packagin
- 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 aluminium with model number 4100 as a reference. Product designation in aluminium (incl. packaging materials) weighs 268 g. The fitting and LCA results are representative for all DORMA OGRO window handles in the respective design.

3.2 System boundary

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

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.

4. LCA: Scenarios and additional technical information

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel GLO: Truck PE	-	l/100km
Transport distance	639.26	km

Capacity utilisation (including empty runs)	85	%
	-	

Installation in the building (A5)

Name	Value	Unit
------	-------	------



Packaging materials	18.7	g
---------------------	------	---

Reference service life

Name	Value	Unit
Reference service life (BBSR 2011)	≥ 50	a

End of life (C1-C4)

Name	Value	Unit
Recycling	234,5	g
Energy recovery	15.0	g

Disposal transport (C2)

Name	Value	Unit
Means of transport Truck	17.3 useful load, Euro 3	t
Transport distance	75	km
Use of capacity (including empty runs)	50	%

5. LCA: Results

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	MND	MND	MND	MND	MND	MND	X	X	MND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 OGRO aluminium window handle

Parameter	Unit	A1-A3	A4	A5	C2	C3	D
Global warming potential	[kg CO ₂ -Eq.]	1.67E+0	1.02E-2	1.56E-2	1.60E-3	1.26E-1	-1.86E+0
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	8.24E-8	3.80E-12	1.14E-11	5.94E-13	4.58E-9	-1.91E-7
Acidification potential of land and water	[kg SO ₂ -Eq.]	4.48E-3	6.60E-5	-3.69E-6	1.04E-5	2.37E-4	-8.85E-3
Eutrophication potential	[kg (PO ₄) ³ -Eq.]	5.07E-4	1.59E-5	-3.19E-7	2.50E-6	2.27E-5	-3.77E-4
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	4.19E-4	-2.68E-5	-1.36E-6	-4.21E-6	1.72E-5	-5.08E-4
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	8.04E-7	4.04E-10	-1.65E-10	6.32E-11	3.95E-8	-7.69E-7
Abiotic depletion potential for fossil resources	[MJ]	2.29E+1	1.41E-1	-2.00E-1	2.21E-2	1.11E+0	-1.75E+1

RESULTS OF THE LCA - RESOURCE USE: 1 OGRO aluminium window handle

Parameter	Unit	A1-A3	A4	A5	C2	C3	D
Renewable primary energy as energy carrier	[MJ]	2.99E+0	5.54E-3	6.80E-4	8.67E-4	5.44E-2	-7.76E+0
Renewable primary energy resources as material utilization	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total use of renewable primary energy resources	[MJ]	2.99E+0	5.54E-3	6.80E-4	8.67E-4	5.44E-2	-7.76E+0
Non-renewable primary energy as energy carrier	[MJ]	2.65E+1	1.42E-1	-1.99E-1	2.22E-2	1.37E+0	-2.45E+1
Non-renewable primary energy as material utilization	[MJ]	5.21E-6	0.00E+0	0.00E+0	0.00E+0	4.36E-11	-1.30E-9
Total use of non-renewable primary energy resources	[MJ]	5.21E-4	0.00E+0	0.00E+0	0.00E+0	4.36E-11	-1.30E-9
Use of secondary material	[kg]	3.42E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
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]	-	-	-	-	-	-

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

1 OGRO aluminium window handle

Parameter	Unit	A1-A3	A4	A5	C2	C3	D
Hazardous waste disposed	[kg]	-	-	-	-	-	-
Non-hazardous waste disposed	[kg]	-	-	-	-	-	-
Radioactive waste disposed	[kg]	-	-	-	-	-	-
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	2.35E-1	0.00E+0
Materials for energy recovery	[kg]	0.00E+0	0.00E+0	1.87E-2	0.00E+0	1.50E-2	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	3.96E-2	0.00E+0	3.88E-2	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	1.11E-1	0.00E+0	1.31E-3	0.00E+0

6. LCA: Interpretation

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

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

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

CEN/TR 15941:2010-03: Sustainability of construction works – Environmental product declarations – Methodology for selection and use of generic data; German version CEN/TR 15941:2010.

DIN EN ISO 9001:2008-12: Quality management systems – Requirements (ISO 9001:2008); Tri-lingual version EN ISO 9001:2008

DIN EN ISO 14001:2009-11: Environmental management systems – Requirements with guidance for use (ISO 14001:2004 + Cor. 1:2009); German and English version EN ISO 14001:2004 + AC:2009

DIN EN ISO 14044:2006-10: Environmental management – Life cycle assessment – Requirements and guide-lines (ISO 14044:2006); German and English version EN ISO 14044:2006.

DIN 18267:2005-01: Window handles – Clickable and lockable window handles

DIN EN 1670:2007-06: Building hardware - Corrosion resistance - Requirements and test methods; German version EN 1670:2007

Ecoinvent: Data base for life cycle assessment (life cycle inventory analysis data), version 2.2 Swiss Centre for Life Cycle Inventories, St. Gallen

GaBi 5: Software and data base for comprehensive analysis. LBP, University of Stuttgart and PE International, 2011

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), 2013/04

www.bau-umwelt.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

**Publisher**

Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@bau-umwelt.com
Web www.bau-umwelt.com

**Programme holder**

Institut Bauen und Umwelt e.V.
Panoramastr 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 – 3087748 - 29
Mail info@bau-umwelt.com
Web www.bau-umwelt.com

Logo

Author of the Life Cycle Assessment

Name
Straße, Nr.
PLZ, Ort
Land

Tel Nummer
Fax Nummer
Mail e-mail
Web **Web-Adresse**

Logo

Owner of the Declaration

Name
Straße, Nr.
PLZ, Ort
Land

Tel Nummer
Fax Nummer
Mail e-mail
Web **Web-Adresse**