

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A1

Owner of the Declaration	EJOT Baubefestigungen GmbH
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-EJO-20190101-CBD1-EN
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Valid to	23.09.2024

EJOT CROSSFIX® facade system EJOT Austria GmbH & Co KG

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General Information

EJOT Austria GmbH & Co KG

Programme holder

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Declaration number

EPD-EJO-20190101-CBD1-EN

This declaration is based on the product category rules:

Thin walled profiles and profiled panels of metal, 07.2014
(PCR checked and approved by the SVR)

Issue date

24.09.2019

Valid to

23.09.2024



Dipl. Ing. Hans Peters
(chairman of Institut Bauen und Umwelt e.V.)



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EJOT CROSSFIX® Facade system

Owner of the declaration

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Declared product / declared unit

This declaration describes a specific substructure system with a console length of 240 mm and a 1-layer aluminium profile (total weight 2.74 kg/m²) for the fastening of 1 m² facade element in the field of rear-ventilated facades.

Further product compositions (80 and 400 mm console length with 1- and 2-layer aluminium profiles as well as 240 mm console length with 2-layer design) can be found in the separate annex to this EPD.

Scope:

The EPD refers to all products comprised in the EJOT portfolio which are required for the installation of a rear-ventilated facade with an EJOT CROSSFIX® substructure system.

The declared products are manufactured at sites in Austria, Germany, Poland, Switzerland and Bosnia and Herzegovina.

The data base is the year 2018. The declared results are valid for the average material consumption for 1 m² rear-ventilated facade to be fastened, so the results can be extrapolated with the given formula according to the type of design, total protrusion and material requirement.

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.

The EPD was created according to the specifications of *EN 15804+A1*. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard *EN 15804* serves as the core PCR
Independent verification of the declaration and data
according to *ISO 14025:2010*

internally externally



Juliane Franze
(Independent verifier appointed by SVR)

Product

Product description/Product definition

The EJOT CROSSFIX® facade system is an easy-to-install, flexible, low-thermal-bridging substructure system in the area of rear-ventilated facades. With one console length, this system allows for the compensation of wall tolerances of up to 40mm in order to install an even rear-ventilated facade system.

The system comprises the following components:
1) Stainless steel wall console (protrusion 40-400 mm),
2) Stainless steel stress plate,
3) Thermostop (thermal separator),

- 4) Stainless steel power key,
- 5) EJOT fasteners (depending on the static requirement),
- 6) Support profiles

and is suitable for substructures with horizontal, vertical as well as one-layer and two-layer design. Compared to conventional systems, the use of stainless steel wall consoles can significantly reduce the thermal bridge surcharge in the system. Therefore, the console is a certified passive house component.

The placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) is governed by Regulation (EU) No 305/2011 (CPR). The product requires a declaration of performance considering the /EN 1090-1/DIN EN 1090-1:2012-02, Execution of steel structures and aluminium structures - Part 1: Requirements for conformity assessment of structural components and the CE marking. The respective national regulations apply to the use.

Application

The system dealt with in this declaration is mainly used for the implementation of a substructure in the area of rear-ventilated facades on different substructures and design types.

Technical Data

The technical data of the product can be found in the declaration of Performance (DoP):

1. Product description:

Wall console, extrusion profiles, agraffe, profile strips, clips (aluminium, steel and stainless steel), fastening elements

2. Application:

Substructure curtain facade

3. Year of manufacture: 2017

4. Execution standard: /EN 1090-2/ ; /EN 1090-3/

5. Geometric tolerances: acc. to production drawings

6. Fracture strength: NPD

7. Weldability:

EN AW 6063 T66, EN AW 6060 T66 acc. to /EN 1011-4/ and /EN 1999-1-1/, 1.4301, 1.4404 acc. to /EN 10088/

8. Fire behaviour: material classified as A1

9. Fire resistance: NPD

10. Release of cadmium: NPD

11. Release of radioactive radiation: NPD

12. Durability:

Aluminium: untreated, or anodised acc. to /ISO 7599/; powder-coated acc. to /EN 12206-1/

Steel: strip-galvanized acc. to /EN 10346/ or stainless steel

13. Load-carrying capacity: NPD

14. Fatigue strength: NPD

15. Design: Acc. to /EN 1999/, /EN 1993/, /ETAG 020/ and /P-BWU02-178002/ see initial sizing or external initial sizing

16. Production:

According to the product specification and /EN 1090-2/, /EN-1090-3/

17. Execution class:

EXC1, EXC2 and EXC3; EXC4 optionally upon request

18. Installation: NPD

Constructional data

The constructional data are representative of all substructure systems that are implemented with the CROSSFIX® facade system. The given data are part of the basis for static calculations of the System:

Name	Value	Unit
Thickness of the wall console	1.5	mm
Grammage of the substructure	2.74	kg/m ²
Height of the wall console	≥ 80	mm
Minimum tensile strength of the wall console	≥ 540	N/mm ²
Yield strength of the wall console	≥ 230	N/mm ²
Thickness of support profiles	≥ 1,8	mm
Minimum tensile strength of support profiles	≥ 245	N/mm ²
Yield strength of support profiles	≥ 200	N/mm ²
Thickness of the power key	1,5	mm
Anchor spacing with power key	≥ 250	mm

Performance values of the product corresponding to the declaration of performance in respect of the Essential Characteristics according to /EN 1090-1:2012/, Execution of steel structures and aluminium structures.

Base materials/Ancillary materials

The essential base materials or intermediate products for the production of 1 m² facade substructure are:

- Stainless steel 40- 65 %
- Aluminium 40- 65 %
- Steel 5- 10 %
- PA polyamid 1- 3 %
- Dye < 1 %

Depending on the used substructure design, resulting protrusion and statically related layout, the % shares may change.

Reference service life

The service life of the CROSSFIX® facade system is often determined by the service life of the building. Due to the materials and material combinations used, a maintenance-free system is assumed.

The service life of the CROSSFIX® facade system is longer than the service life of the facade panels.

If used correctly, a service life of more than 70 years can be assumed.

At the end of the service life of a building, the individual components of the facade can be easily removed and enable a controlled dismantling with virtually sorted separation.

LCA: Calculation rules

Declared Unit

The declared unit is 1 m² CROSSFIX® facade system with a console length of 240 mm and one layer of aluminium profiles with a total weight of 2.74 kg/m². Further product compositions (80 and 400 mm console length with 1- and 2-layer aluminium profiles as well as 240 mm console length with 2-layer design) can be found in the annex to this EPD.

Indication of the declared unit

Name	Value	Unit
Grammage	2.74	kg/m ²
Conversion factor to 1 kg	0.365	-
Declared unit	1	m ²

System boundary

The EPD covers the LCA results from cradle to gate with options. The following modules are declared:

- Product stage (A1-A3)
 - Provision and transport of the intermediate products and production of the single components incl. packaging (PE wrap, cardboard box and wooden pallets) and

power consumption (electricity and thermal energy)

- End-of-life stage (C2 and C3)
 - Transport to disposal (50 km)
 - Efforts for disposal (recycling of (stainless) steel and Aluminium components, thermal recovery of plastic parts) and energy recovery

- Benefit potentials and loads beyond the system boundaries (D)

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.

For evaluation the impact assessment method according to /CML 2001/, version April 2013, was used. The underlying database is the *GaBi ts 2018 SP 37*.

LCA: Scenarios and additional technical information

The EPD covers the LCA results from cradle to gate with options. The following modules are declared:

Transport zu Baustelle (A4)

Name	Value	Unit
Litres of fuel	-	l/100km
Transport distance	-	km
Capacity utilisation (including empty runs)	-	%
Gross density of products transported	-	kg/m ³
Capacity utilisation volume factor	-	-

Assembly (A5)

Name	Value	Unit
Other energy carriers (renewable primary energy used as raw materials, PERM [from packaging])	-1.06	MJ

Module A5 is not declared. Only the values for the calculation of the renewable primary energy used as raw materials are given here according to the requirements in /IBU PCR part A/.

Landfilling (collection loss at recycling)	0.137	kg
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For all metal components, a recycling scenario is assumed. Potential benefits are assigned. For the calculation of the quantities, 5% collection loss is assumed, which are deposited without crediting potential benefits. Furthermore, a loss of 5% during remelting is included. For included secondary materials (steel and stainless steel), no benefits are. The aluminium is 100% modelled as primary aluminium, thus high benefits are assigned in the End of Life (EoL).

The potential benefits for electricity and thermal energy which are assigned during the combustion of the plastic component are offset against European data sets.

End of life (C1-C4)

Name	Value	Unit
Collected as mixed construction waste	0	kg
Reuse	0	kg
Recycling (stainless steel, steel, aluminium)	1.56	kg
Energy recovery (plastic component)	0.06	kg

LCA: Results

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

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	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	MND	X	X	MND	X	

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 m² CROSSFIX

Parameter	Unit	A1-A3	C2	C3	D
Global warming potential	[kg CO ₂ -Eq.]	1.78E+1	8.07E-3	1.44E-1	-1.06E+1
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	7.57E-13	2.00E-18	6.78E-17	1.30E-13
Acidification potential of land and water	[kg SO ₂ -Eq.]	7.47E-2	1.96E-5	4.58E-5	-5.42E-2
Eutrophication potential	[kg (PO ₄) ³ -Eq.]	5.26E-3	4.92E-6	4.03E-6	-3.14E-3
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	4.91E-3	-6.51E-6	2.24E-6	-2.98E-3
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	3.64E-4	7.04E-10	1.05E-8	-1.08E-4
Abiotic depletion potential for fossil resources	[MJ]	2.08E+2	1.09E-1	7.83E-2	-1.16E+2

RESULTS OF THE LCA - RESOURCE USE according to EN 15804+A1: 1 m² CROSSFIX

Parameter	Unit	A1-A3	C2	C3	D
Renewable primary energy as energy carrier	[MJ]	6.62E+1	6.51E-3	1.46E-2	-5.55E+1
Renewable primary energy resources as material utilization	[MJ]	1.06E+0	0.00E+0	0.00E+0	0.00E+0
Total use of renewable primary energy resources	[MJ]	6.73E+1	6.51E-3	1.46E-2	-5.55E+1
Non-renewable primary energy as energy carrier	[MJ]	2.45E+2	6.51E-3	1.89E+0	-1.35E+2
Non-renewable primary energy as material utilization	[MJ]	2.73E+0	0.00E+0	-1.80E+0	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	2.47E+2	6.51E-3	8.59E-2	-1.35E+2
Use of secondary material	[kg]	9.89E-1	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
Use of non-renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of net fresh water	[m ³]	2.06E-1	1.10E-5	3.59E-4	-1.69E+1

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES according to EN 15804+A1: 1 m² CROSSFIX

Parameter	Unit	A1-A3	C2	C3	D
Hazardous waste disposed	[kg]	2.37E-4	6.08E-9	7.67E-10	-1.81E-4
Non-hazardous waste disposed	[kg]	2.83E+0	9.23E-6	1.51E-1	-2.50E+0
Radioactive waste disposed	[kg]	1.55E-2	2.24E-7	2.99E-6	-7.26E-3
Components for re-use	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	[kg]	0.00E+0	0.00E+0	1.56E+0	0.00E+0
Materials for energy recovery	[kg]	0.00E+0	0.00E+0	5.68E-2	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	3.15E-1	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	5.68E-1	0.00E+0

References

/EN 1090-1/

DIN EN 1090-1:2012-02, Execution of steel structures and aluminium structures - Part 1: Requirements for conformity assessment of structural components

/EN 1090-2/

DIN EN 1090-2:2018-09, Execution of steel structures and aluminium structures - Part 2: Technical requirements for steel structures

/EN 1090-3/

DIN EN 1090-3:2019-07, Execution of steel structures and aluminium structures - Part 3: Technical requirements for aluminium structures

/ETAG 020/

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/EAD 330232-00-0601/

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/P-BWU02-178002/

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/DIN EN 1993/

DIN EN 1993-1-1:2010-12; Eurocode 3: Design of steel structures - Part 1-1: General rules and rules for buildings

/DIN EN 1999/

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/DIN 18516/

DIN 18516-1: 2010-06, Cladding for external walls, ventilated at rear - Part 1: Requirements, principles of testing

/DIN EN 755/

DIN EN 755-1:2016-10; Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 1: Technical conditions for inspection and delivery

/ISO 7599/

ISO 7599: 2018-01; Anodizing of aluminium and its alloys - Method for specifying decorative and protective anodic oxidation coatings on aluminium

/DIN EN 10088/

DIN EN 10088-1:2014-12; Stainless steels - Part 1: List of stainless steels

/DIN EN 1011-4/

DIN EN 1011-4:2001-02; Welding - Recommendations for welding of metallic materials - Part 4: Arc welding of aluminium and aluminium alloys

/DIN EN 12206-1/

DIN EN 12206-1:2004-09; Paints and varnishes - Coating of aluminium and aluminium alloys for architectural purposes - Part 1: Coatings prepared from coating powder

/DIN EN 10346/

DIN EN 10346:2015-10; Continuously hot-dip coated steel flat products for cold forming - Technical delivery conditions

/EN ISO 14001 : 2015/

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/EN ISO 9001 : 2015/

Quality management systems - Requirements (ISO 9001:2015-09)

/CML 2001/

Methodology principles:

Guinée, J.B.; Gorrée, M.; Heijungs, R.; Huppes, G.; Kleijn, R.; Koning, A. de; Oers, L. van; Wegener Sleeswijk, A.; Suh, S.; Udo de Haes, H.A.; Bruijn, H. de; Duin, R. van; Huijbregts, M.A.J. Handbook on life cycle assessment. Operational guide to the ISO standards. I: LCA in perspective. IIa: Guide. IIb: Operational annex. III: Scientific background. Kluwer Academic Publishers, ISBN 1-4020-0228-9, Dordrecht, 2002, 692 pp.

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GABI ts

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/IBU PCR Teil A/

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/IBU 2016/

IBU (2016): General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V. (IBU). Version 1.1, Institut Bauen und Umwelt e.V., Berlin.

/ISO 14025/

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

/EN 15804/

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