

LEED v4[®]
(Leadership in Energy and Environmental Design)

CROSS-| - FIX

Substructure System

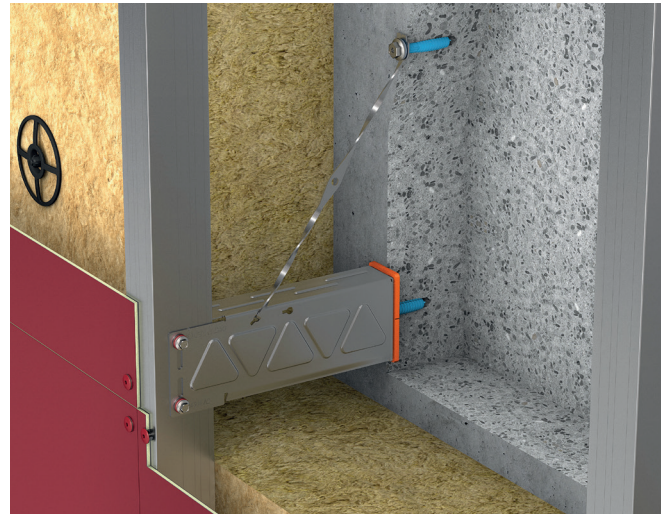
EJOT

EJOT CROSSFIX® substructure system

The EJOT CROSSFIX® system is an easy-to-install, flexible, low-thermal-bridging substructure system for rear-ventilated façades. 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 façade 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 powerkey
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.



Sustainable Sites (SS)

Not relevant for this product.



Water Efficiency (WE)

Not relevant for this product.

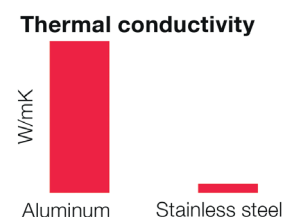


Energy & Atmosphere (EA)

Increased efficiency through 100% stainless steel

Energy efficiency: Improved U-value

Specifying façade substructures, it is recommended to use materials with low thermal conductivity in order to prevent the formation of thermal bridges. The thermal conductivity of stainless steel is approximately 13 W/mK whereas aluminum is typically 160 to 220 W/mK.



Isotherms

Comparison of the temperature profiles between aluminum (fig. 1) and the EJOT CROSSFIX® stainless steel brackets (fig. 2). By using stainless steel, CROSSFIX® reduces the thermal conductivity compared to aluminum constructions. Therefore, EJOT can achieve strongly improved U-values with the same insulation thickness.

Displayed lines in the figure

Lines with the same temperature are called isotherms. If they run nearly parallel it indicates that there is only a slight disturbance compared to the one-dimensional heat flow (U-Value, heat transition coefficient). As illustrated in figure 1, a high thermal bridge causes a high loss of heat and the interior wall may cool excessively. Therefore, a high temperature difference cannot be created (visually demonstrated by the colors of the temperature areas).



Figure 1: Aluminum



Figure 2: EJO CROSSFIX® (Stainless Steel)

Source Isotherms: Passive House Institute



Materials & Resources (MR)

Building product disclosure and optimization - environmental product declarations
 → To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts.

Product information

Item	Value
Critically reviewed LCA acc. to ISO 14044?	yes
Download link of the document/study	https://epd-online.com
Industry-wide (generic) EPD (Type III, incl.external verification)?	no
Product specific EPD (Type III, incl. external verification)?	yes
EPD program operator	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin
EPD program operator country	Germany
EPD number	EPD-EJO-20190101-CBD1-DE
Declared unit	1 m ² (CROSSFIX® façade system, length 240mm, weight 2,74 kg/m ²)

Results of the LCA – ENVIRONMENTAL IMPACTS

Life cycle stages	Product stage	End of Life Stage		Benefits & loads beyond system bound.
		C2	C3	
Declared life cycle stages (DIN EN 15804)	A1 - A3	C2	C3	D
GWP [kg CO ² -eq.]	1,78E+1	8,07E-3	1,44E-1	-1,06E+1
ODP [kg CFC11-eq.]	7,57E-13	2,00E-18	6,78E-17	1,30E-13
AP [kg SO ² -eq.]	7,47E-2	1,96E-5	4,58E-5	-5,42E-2
EP [kg PO ₄ ³⁻⁻ -eq.]	5,26E-3	4,92E-6	4,03E-6	-3,14E-3
POCP [kg eth.-eq.]	4,91E-3	-6,51E-6	2,24E-6	-2,98E-3
ADPE [kg Sb-eq.]	3,64E-4	7,04E-10	1,05E-8	-1,08E-4
ADPF [MJ]	2,08E+2	1,09E-1	7,83E-2	-1,16E+2

Results of the LCA – RESOURCE USE

Life cycle stages	Product stage	End of Life Stage		Benefits & loads beyond system bound.
		C2	C3	
Declared life cycle stages (DIN EN 15804)	A1 - A3	C2	C3	D
PERE [MJ]	6,62E+1	6,51E-3	1,46E-2	-5,55E+1
PERM [MJ]	1,06E+0	0,00E+0	0,00E+0	0,00E+0
PERT [MJ]	6,73E+1	6,51E-3	1,46E-2	-5,55E+1
PENRE [MJ]	2,45E+2	6,51E-3	1,89E+0	-1,35E+2
PENRM [MJ]	2,73E+0	0,00E+0	-1,80E+0	0,00E+0
PENRT [MJ]	2,47E+2	6,51E-3	8,59E-2	-1,35E+2
SM [kg]	9,89E-1	0,00E+0	0,00E+0	0,00E+0
RSF [MJ]	0,00E+0	0,00E+0	0,00E+0	0,00E+0
NRSF [MJ]	0,00E+0	0,00E+0	0,00E+0	0,00E+0
FW [m ³]	2,06E-1	1,10E-5	3,59E-4	-1,69E-1

Results of the LCA – OUTPUT FLOWS AND WASTE CATEGORIES

Life cycle stages	Product stage	End of Life Stage		Benefits & loads beyond system bound.
		C2	C3	
Declared life cycle stages (DIN EN 15804)	A1 - A3	C2	C3	D
HWD [kg]	2,37E-4	6,08E-9	7,67E-10	-1,81E-4
NHWD [kg]	2,83E+0	9,23E-6	1,51E-1	-2,50E+0
RWD [kg]	1,55E-2	2,24E-7	2,99E-6	-7,26E-3
CRU [kg]	0,00E+0	0,00E+0	0,00E+0	0,00E+0
MFR [kg]	0,00E+0	0,00E+0	1,56E+0	0,00E+0
MER [kg]	0,00E+0	0,00E+0	5,68E-2	0,00E+0
EEE [MJ]	0,00E+0	0,00E+0	3,15E-1	0,00E+0
EET [MJ]	0,00E+0	0,00E+0	5,68E-1	0,00E+0

Note: Detailed names of the given abbreviations can be found in the Glossary.



Materials & Resources (MR)

Building product disclosure and optimization – sourcing of raw materials
 → To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically and socially preferable life-cycle impacts and sourcing.

Product information

Responsible sourcing and extraction	Description / Unit	
Participation in an extended producer responsibility program?	no	
Bio-based products meet the Sustainable Agriculture Network’s Sustainable Agriculture Standard? (must be tested using ASTM Test Method D6866 and be legally harvested)	Not applicable	
Wood products certified by the Forest Stewardship Council or USGBC-approved equivalent?	Not applicable	
Materials reused		-
Postconsumer recycled content		37 %
Preconsumer recycled content		0 %

Building product disclosure and optimization – material ingredients
 → To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances.

Product information

Type of reporting	Certification program (e.g. Green screen, cradle to cradle version/level, REACH)	Value/Comment
Option 1: material ingredient reporting	CASNR or EC Number	
	Greenscreen List Translator (LT) or Full GreenScreen Benchmark (BM)	
	The Globally Harmonized System of Classification and Labeling of Chemicals rev.6 (2015) (GHS)	No hazardous Substances included
	Health Product Declaration	no
	Cradle to Cradle Certificate	no
	Material Health Certificate	no
	Declare Product Label	no
	ANSI/BIFMA e3 Furniture Sustainability Standard	Not applicable
	Product Lens Certification	no
Facts – NSF/ANSI 336:	no	
Option 2: Material ingredient optimization	Material Ingredient Screening and Optimization Action Plan	no
	GreenScreen Benchmark assessment	no
	Declare labels	no
	Material Health Certificate	no
	Cradle to Cradle Certified	no
	REACH Optimization	no
USGBC approved program	no	



Indoor Environmental Quality (EQ)

Not relevant for this product.



Innovation (IN)

Innovation

→ To encourage projects to achieve exceptional or innovative performance.

The new substructure system for rear ventilated façades is revolutionizing the market: CROSSFIX® is the first substructure made of stainless steel [grade 304 (A2), 316 (A4)] that can be used for horizontal and vertical support profiles. This increases your flexibility, simplifies assembly and saves valuable time and storage costs. The CROSSFIX® console is made of 100% stainless steel and clearly reduces the thermal transmission of the system.

EJOT CROSSFIX® offers a one-stop solution with proven quality.

100%
stainless steel



Characteristics

- Stainless steel console, grade 304 and 316 standard
- Suitable for horizontal and vertical applications
- Passive-house certified
- Optimized load introduction due to FEM-analysis
- Conforms to installation standards (hole spacing of 10" (250 mm) for masonry)

Advantages

- **Your one-stop solution:** EJOT provides a complete system for all applications complete with assembly and processing information
- **Universal and versatile:** CROSSFIX® offers a one-console solution for vertical and horizontal mounting; one fastener for fixed point or sliding point applications
- **Economical:** Easy and fast installation
- **Cost-efficient:** Saves on material and storage costs
- **Energy-efficient:** Significant reduction of thermal transmittance of the console (in comparison to aluminum)
- **Safety:** Higher static load capacity, better fire performance

General Information

Company name:	EJOT Baubefestigungen GmbH
Address:	In der Stockwiese 35, 57334 Bad Laasphe
Contact person:	
Phone:	
Email:	
Homepage:	www.ejot.com
Date:	2019-10-08

Technical data

The technical data of the product can be found in the declaration of performance:

- Product description:** Wall console, extrusion profiles, agraffe, profile strips, clips (aluminium, steel and stainless steel), fastening elements
- Application:** Substructure curtain façade
- Year of manufacture:** 2017
- Execution standard:** /EN 1090-2/ ; /EN 1090-3/
- Geometric tolerances:** acc. to production drawings
- Fracture strength:** NPD
- 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/
- Fire behaviour:** material classified as A1
- Fire resistance:** NPD
- Release of cadmium:** NPD
- Release of radioactive radiation:** NPD
- 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
- Load-carrying capacity:** NPD
- Fatigue strength:** NPD
- Design:** Acc. to /EN 1999/, /EN 1993/, /ETAG 020/ and /P-BWU02-178002/ see initial sizing or external initial sizing
- Production:** According to the product specification and /EN 1090-2/, /EN-1090-3/
- Execution class:** EXC1, EXC2 and EXC3; EXC4 optionally upon request
- Installation:** NPD

Constructional data

The constructional data are representative of all substructure systems that are implemented with the CROSSFIX® façade 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
Surface weight 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 powerkey	1.5	mm
Anchor spacing with powerkey	≥ 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.

Product information

Environmental product declaration

Number	EPD-EJO-20190101-CBD1-DE
Program operator	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin, Germany
Author of the LCA	thinkstep AG, Leinfelden-Echterdingen, Germany

Xxx others (e.g. HPD)

Number	xxx
Publisher	xxx
Others	xxx

Xxx others (e.g. HPD)

Number	xxx
Publisher	xxx
Others	xxx

Glossary

GWP	Global warming potential
ODP	Depletion potential of the stratospheric ozone layer
AP	Acidification potential of land and water
EP	Eutrophication potential
POCP	Formation potential of tropospheric ozone photochemical oxidants
ADPE	Abiotic depletion potential for non-fossil resources
ADPF	Abiotic depletion potential for fossil resources
PE total	Total use of primary energy resources (=PERT+PENRT)
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PERM	Use of renewable primary energy resources used as raw materials
PERT	Total use of renewable primary energy resources
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
PENRM	Use of non-renewable primary energy resources used as raw materials
PENRT	Total use of non-renewable primary energy resources
SM	Use of secondary material
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
FW	Use of net fresh water
HWD	Hazardous waste disposed
NHWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed
CRU	Components for re-use
MFR	Materials for recycling
MER	Materials for energy recovery
EE	Exported energy per energy carrier