Product information for the building certification scheme LEED v4® (Leadership in Energy and Environmental Design)

The intention of this document is to support project teams pursuing LEED v4 certification by providing an overview of how your products contribute to LEED v4 credits. Basis of this information is Leed v4 credit library (2014 -07)[1]

Self-tapping screws

General Information

Company name:	EJOT Baubefestigungen GmbH
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Date:	22.12.2014

Product information

1. Self-tapping steel screws

Product description

Self-tapping steel screws are fasteners for fixing metal sections on substructures. Self-tapping fasteners form the female thread without swarf. It is generally distinguished between self-drilling screws and screws without drill point. According to requirement and material the screws are anti-corrosion coated and / or waxed. Depending on the application they also feature a sealing washer made of steel or stainless steel and EPDM rubber seal (ethylene propylene-dien rubber).

Application

Self-tapping screws with or without drill point are used whenever fastening is only one-sided and the additional work step "thread cutting" can be omitted and the demands on the joint allow this. This is usually the case with thin-walled metal joints, often used in modern industrial lightweight construction. Fasteners that do not exceed an external thread diameter of 10mm are usually sufficient for these application cases.
Typical application examples on different substructures are shown below.

[1] http://www.usgbc.org/credits (8/2014)

Technical data

Constructional data to thread-forming screws (self-tapping and self-drilling) are provided in the corresponding approvals and technical drawings, illustrated below with an excerpt from the / ETA 10/0200/.

Name	Value	Unit
Screw diameter	4.2 - 8	mm
Use category acc. to ETA	Fasteners for metal components and sheet metal /ETA 10/0200/ Fasteners for sandwich panels /ETA 13/0177/	-
Characteristic values of the tensile strength	0.38 - 8.7	kN
Screw length	13 - 300	mm
Sealing washer diameter	11 - 29	mm
Characteristic shear force carrying capacity of the joint	0.69 - 8.1	kN
Density	7850	kg/m^3
Material	SAE 1018 / 1022	-

Product declarations

Environmental product declaration

Number	EPD-EJO-20140112-IBC1-DE
Program operator	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin, Germany
Author of the LCA	PE INTERNATIONAL AG, Leinfelden-Echterdingen, Germany

2. Self-tapping stainless steel screws

Product description

Self-tapping stainless steel screws are fasteners for fixing metal sections on substructures. Self-tapping fasteners form the female thread without swarf. It is generally distinguished between self-drilling screws and screws without drill point. The described self-tapping screws are made of stainless steel with different corrosion resistance classes. According to requirement and material the screws are anti-corrosion coated and / or waxed. Depending on the application they also feature a sealing washer made of steel or stainless steel and EPDM rubber seal (ethylene propylene-dien rubber).

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Product sustainability fact sheet

Application

Self-tapping screws with or without drill point are used whenever fastening is only one-sided and the additional work step "thread cutting" can be omitted and the demands on the joint allow this. This is usually the case with thin-walled metal joints, often used in modern industrial lightweight construction. Fasteners that do not exceed an external thread diameter of 10mm are usually sufficient for these application cases.
Typical application examples on different substructures are shown below.

Technical data

Constructional data to thread-forming screws (self-tapping and self-drilling) are provided in the corresponding approvals and technical drawings, illustrated below with an excerpt from the / ETA 10/0200/.

Name	Value	Unit
Screw diameter	4.8 - 8	mm
Use category acc. to ETA	Fasteners for metal components and sheet metal /ETA 10/0200/ Fasteners for sandwich panels /ETA 13/0177/	-
Characteristic values of the tensile strength	0.42 - 13.4	kN
Screw length	19 - 300	mm
Sealing washer diameter	11 - 29	mm
Characteristic shear force carrying capacity of the joint	0.55 - 11.3	kN
Density	7850	kg/m^3
Material	1.4301 / 1.4401	-

Product declarations

Environmental product declaration

Number	EPD-EJO-20140113-IBC1-DE
Program operator	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin, Germany
Author of the LCA	PE INTERNATIONAL AG, Leinfelden-Echterdingen, Germany

3. Self-tapping bi-metal screws

Product description

Self-tapping bi-met screws are fasteners for fixing metal sections on substructures. Self-tapping fasteners form the female thread without swarf. It is generally distinguished between self-drilling screws and screws without drill point. Self-tapping bi-met screws are usually made of a stainless steel and a steel element. The screws are waxed according to the requirements. Depending on the application they also feature a sealing washer made of steel or stainless steel and EPDM rubber seal (ethylene propylene-dien rubber).

Application

Self-tapping screws with or without drill point are used whenever fastening is only one-sided, the additional work step "thread cutting" can be omitted and the demands on the joint allow this. This is usually the case with thin-walled metal joints, often used in modern industrial lightweight construction. Fasteners that do not exceed an external thread diameter of 10mm are usually sufficient for these application cases.
Typical application examples on different substructures are shown below.

Technical data

Constructional data to thread-forming screws (self-tapping and self-drilling) are provided in the corresponding approvals and technical drawings, illustrated below with an excerpt from the / ETA 10/0200/.

Name	Value	Unit
Screw diameter	4.8 - 6.3	mm
Use category acc. to ETA	Fasteners for metal components and sheet metal /ETA 10/0200/ Fasteners for sandwich panels /ETA 13/0177/	-
Characteristic values of the tensile strength	0.42 - 13.4	kN
Screw length	19 - 300	mm
Sealing washer diameter	11 - 29	mm
Characteristic shear force carrying capacity of the joint	0.55 - 11.3	kN
Density	7850	kg/m^3
Material	38B2 + 1.4301 / 1.4401	-

Product declarations

Environmental product declaration

Number	EPD-EJO-20140114-IBC1-DE
Program operator	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin, Germany
Author of the LCA	PE INTERNATIONAL AG, Leinfelden-Echterdingen, Germany

Materials and Resources (MR)

Summary

Materials and Resources credits encourage using sustainable building materials and reducing waste.

Building product disclosure and optimization - environmental product declarations

Intent of this credit

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. To reward project teams for selecting products from manufacturers who have verified improved environmental life-cycle impacts.

Product information for EJOT screw fasteners within this credit:

Item	Value
Critically reviewed LCA acc. to ISO 14044	yes
Reviewer	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin, Germany
Download link to the documents	Self-tapping steel screws: http://bau-umwelt.de/download/C381e1371X149610abcd5XY4b64/EPD_EJO_20140112_IBC1_DE.pdf Self-tapping stainless steel screws: http://bau-umwelt.de/download/C381e1371X149610abcd5XY20fb/EPD_EJO_20140113_IBC1_DE.pdf Self-tapping bimetallic screws: http://bau-umwelt.de/download/C381e1371X149610abcd5XYe6/EPD_EJO_20140114_IBC1_DE.pdf

Product specific EPD (Type III, including external verification)	Yes
EPD program operator	Institute Construction and Environment (IBU - Institut Bauen und Umwelt e.V.), Berlin, Germany; www.construction-environment.com
EPD program operator country	Germany
EPD number(s)	EPD-EJO-20140112-IBC1-DE EPD-EJO-20140113-IBC1-DE EPD-EJO-20140114-IBC1-DE

1. Self-tapping steel screws

Results of the LCA – ENVIRONMENTAL IMPACTS:

Declared unit: 1 kg self-tapping steel screws from EJOT		
Declared life cycle stages (standard DIN EN 15978)	PRODUCT STAGE	END OF LIFE STAGE
	A1-A3	C4
GWP [kg CO_2-eq.]	2,910E+0	1,400E-2
ODP [kg CFC11-eq.]	1,140E-9	1,070E-11
AP [kg SO2-eq.]	7,195E-3	8,500E-5
EP [kg PO43-- eq.]	6,600E-4	1,160E-5
POCP [kg Ethene-eq.]	5,630E-4	9,020E-6
ADPE [kg Sb eq.]	6,240E-5	5,010E-9
ADPF [MJ]	3,510E+1	1,870E-1
Caption	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	

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Product sustainability fact sheet

Results of the LCA – RESOURCE USE:

Declared unit: 1 kg self-tapping steel screws from EJOT		
Declared life cycle stages (standard DIN EN 15978)	PRODUCT STAGE	END OF LIFE STAGE
	A1-A3	C4
PE total [MJ]	4,72E+01	2,10E-01
PERE [MJ]	5,830E+0	1,450E-2
PERM [MJ]	0,000E+0	0,000E+0
PERT [MJ]	5,830E+0	1,450E-2
PENRE [MJ]	4,140E+1	1,950E-1
PENRM [MJ]	0,000E+0	0,000E+0
PENRT [MJ]	4,140E+1	1,950E-1
SM [kg]	1,140E+0	-
RSF [MJ]	0,000E+0	0,000E+0
NRSF [MJ]	0,000E+0	0,000E+0
FW [m³]	1,140E-2	-3,680E-4
Caption	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	

Results of the LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

Declared unit: 1 kg self-tapping steel screws from EJOT		
Declared life cycle stages (standard DIN EN 15978)	PRODUCT STAGE	END OF LIFE STAGE
	A1-A3	C4
HWD [kg]	3,380E-3	1,400E-4
NHWD [kg]	4,410E-1	1,000E+0
RWD [kg]	3,330E-3	3,470E-6
CRU [kg]	-	0,000E+0
MFR [kg]	-	0,000E+0
MER [kg]	-	0,000E+0
EEE [MJ]	-	0,000E+0
EET [MJ]	-	0,000E+0
Caption	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: EEE = Exported energy, electric energy, EET = Exported energy, thermal energy	

2. Self-tapping stainless steel screws

Results of the LCA – ENVIRONMENTAL IMPACTS:

Declared unit: 1 kg self-tapping stainless steel screws from EJOT		
Declared life cycle stages (standard DIN EN 15978)	PRODUCT STAGE	END OF LIFE STAGE
	A1-A3	C4
GWP [kg CO_2-eq.]	6,290E+0	1,400E-2
ODP [kg CFC11-eq.]	2,620E-7	1,070E-11
AP [kg SO2-eq.]	6,912E-2	8,500E-5
EP [kg PO43-- eq.]	2,270E-3	1,160E-5
POCP [kg Ethene-eq.]	3,850E-3	9,020E-6
ADPE [kg Sb eq.]	2,030E-4	5,010E-9
ADPF [MJ]	8,110E+1	1,870E-1
Caption	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	

Results of the LCA – RESOURCE USE:

Declared unit: 1 kg self-tapping stainless steel screws from EJOT		
Declared life cycle stages (standard DIN EN 15978)	PRODUCT STAGE	END OF LIFE STAGE
	A1-A3	C4
PE total [MJ]	1,01E+02	2,10E-01
PERE [MJ]	1,260E+1	1,450E-2
PERM [MJ]	0,000E+0	0,000E+0
PERT [MJ]	1,260E+1	1,450E-2
PENRE [MJ]	8,800E+1	1,950E-1
PENRM [MJ]	0,000E+0	0,000E+0
PENRT [MJ]	8,800E+1	1,950E-1
SM [kg]	6,370E-1	-
RSF [MJ]	0,000E+0	0,000E+0
NRSF [MJ]	0,000E+0	0,000E+0
FW [m^3]	-	-
Caption	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	

Results of the LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

Declared unit: 1 kg self-tapping stainless steel screws from EJOT		
Declared life cycle stages (standard DIN EN 15978)	PRODUCT STAGE	END OF LIFE STAGE
	A1-A3	C4
HWD [kg]	-	-
NHWD [kg]	-	-
RWD [kg]	-	-
CRU [kg]	-	0,000E+0
MFR [kg]	-	0,000E+0
MER [kg]	-	0,000E+0
EEE [MJ]	-	0,000E+0
EET [MJ]	-	0,000E+0
Caption	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: EEE = Exported energy, electric energy, EET = Exported energy, thermal energy	

3. Self-tapping bimetallic steel screws Results of the LCA – ENVIRONMENTAL IMPACTS:

Declared unit: 1 kg self-tapping bimetallic steel screws from EJOT		
Declared life cycle stages (standard DIN EN 15978)	PRODUCT STAGE	END OF LIFE STAGE
	A1-A3	C4
GWP [kg CO_2-eq.]	5,300E+0	1,400E-2
ODP [kg CFC11-eq.]	2,230E-7	1,070E-11
AP [kg SO2-eq.]	5,891E-2	8,500E-5
EP [kg PO43-- eq.]	1,930E-3	1,160E-5
POCP [kg Ethene-eq.]	3,290E-3	9,020E-6
ADPE [kg Sb eq.]	1,700E-4	5,010E-9
ADPF [MJ]	6,860E+1	1,870E-1
Caption	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	

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Product sustainability fact sheet

Results of the LCA – RESOURCE USE:

Declared unit: 1 kg self-tapping bimetallic steel screws from EJOT		
Declared life cycle stages (standard DIN EN 15978)	PRODUCT STAGE	END OF LIFE STAGE
	A1-A3	C4
PE total [MJ]	8,47E+01	2,10E-01
PERE [MJ]	1,060E+1	1,450E-2
PERM [MJ]	0,000E+0	0,000E+0
PERT [MJ]	1,060E+1	1,450E-2
PENRE [MJ]	7,410E+1	1,950E-1
PENRM [MJ]	0,000E+0	0,000E+0
PENRT [MJ]	7,410E+1	1,950E-1
SM [kg]	7,050E-1	-
RSF [MJ]	0,000E+0	0,000E+0
NRSF [MJ]	0,000E+0	0,000E+0
FW [m³]	-	-
Caption	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	

Results of the LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

Declared unit: 1 kg self-tapping bimetallic steel screws from EJOT		
Declared life cycle stages (standard DIN EN 15978)	PRODUCT STAGE	END OF LIFE STAGE
	A1-A3	C4
HWD [kg]	-	-
NHWD [kg]	-	-
RWD [kg]	-	-
CRU [kg]	-	0,000E+0
MFR [kg]	-	0,000E+0
MER [kg]	-	0,000E+0
EEE [MJ]	-	0,000E+0
EET [MJ]	-	0,000E+0
Caption	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: EEE = Exported energy, electric energy, EET = Exported energy, thermal energy	

Building product disclosure and optimization – sourcing of raw materials

Intent of this credit

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. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.

Product information for EJOT self-tapping screws within this credit:

Option 1	Description
Third-party verified corporate sustainability report (CSR)	no
Downloadlink to the report	-
Option 2	**Description**
Participation in an extended producer responsibility program	no
Postconsumer recycled content	steel screws: 100 % scrap stainless steel screws: 64 % scrap bimetallic screws: 68 % scrap
Preconsumer recycled content	-

EJOT Baubefestigungen GmbH

Product sustainability fact sheet

Building product disclosure and optimization – material ingredients

Intent of this credit

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. 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. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.

Product information for EJOT self-tapping screws within this credit:

Type of reporting/Item	Value/Comment
Health Product Declaration (HPD)	no
Material Safety Data Sheet (MSDS)	MSDS is available on request
GreenScreen v1.2 Benchmark	no
REACH compliancy	yes The formulation is checked according to the current REACH candidate list. The formulation does not contain any substances of very high concern. Certificates are available on request.