

Statement of Verification

BREG EN EPD No.: 000407

Issue 02

This is to verify that the
Environmental Product Declaration
provided by:
CCL International



is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

1kg of XM/XF Multistrand Post Tensioning Anchor Systems

Company Address

Unit 8,
Millennium Drive,
Leeds,
LS11 5BP



Emma Baker
Operator

06 January 2022
Date of this Issue

23 December 2021
Date of First Issue

22 December 2026
Expiry Date



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BRE Global Ltd., Garston, Watford WD25 9XX.

T: +44 (0)333 321 8811 F: +44 (0)1923 664603 E: Enquiries@breglobal.com

Information modules covered

Product			Construction		Use stage							End-of-life				Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building						
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, Recovery and/or Recycling potential
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: Ticks indicate the Information Modules declared.

Manufacturing site

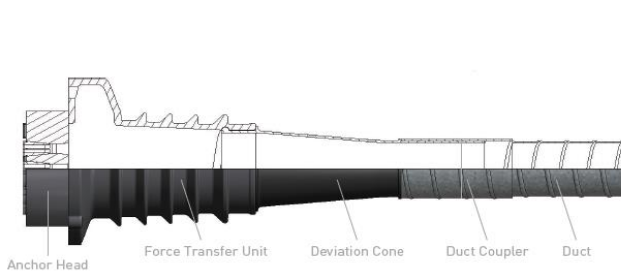
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Construction Product

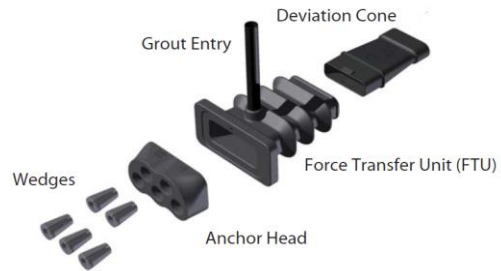
Product Description

The XM and XF are ETA-approved multistrand post-tensioning anchor systems most commonly used in cast-in-place and precast post-tensioned concrete applications. They are used in buildings, bridges, containment and civil structures, as well as repair and strengthening. The ETA approvals are ETA-07/0035 for XM system and ETA-10/0107 for XF system.

The systems can accommodate 13 mm and 15 mm nominal diameter strands. The XM and XF anchor systems cover the whole anchor assembly as described in the ETAs with each assembly comprising the force transfer unit (FTU), the anchor head anchorage (AH), the steel wedges and the plastic cone. The XM system includes sizes XM10 to XM100, and the XF system includes sizes XF10 to XF30.



XM



XF

Anchors are available in range of different sizes:

Anchor Assembly and Description	No. of strands	Anchor Assembly Weight (Kg)
XF range (XF10 to XF30)	2T15 - 5T15 3T13- 6T13	3.7-9.1
XM range (XM10 to XM-110)	3T15 - 37T15 4T13 - 55T13	7-128

This is an average EPD covering both anchor sizes produced over the course of 1 year.

Technical Information

XM

Essential characteristics	Performance	Standard
Anchorage components	Section 1.2.2 and annex 02-33	ETA-07/0035
Strand characteristics	Section 1.2.3.3, table 05 and annex 01	
Prestressing forces	Section 1.2.3.4 and table 06-11	
Friction losses and anchorage wedge set	Section 1.2.5 and 1.2.6	
Mechanical resistance and stability	Section 3	

XF

Essential characteristics	Performance	Standard
Anchorage components	Section 1.2.2 and annex 02-21	ETA-10/0107
Strand characteristics	Section 1.2.3.3, table 05 and annex 01	
Prestressing forces	Section 1.2.3.4 and table 06-11	
Friction losses and anchorage wedge set	Section 1.2.5 and 1.2.6	
Mechanical resistance and stability	Section 3	

Main Product Contents

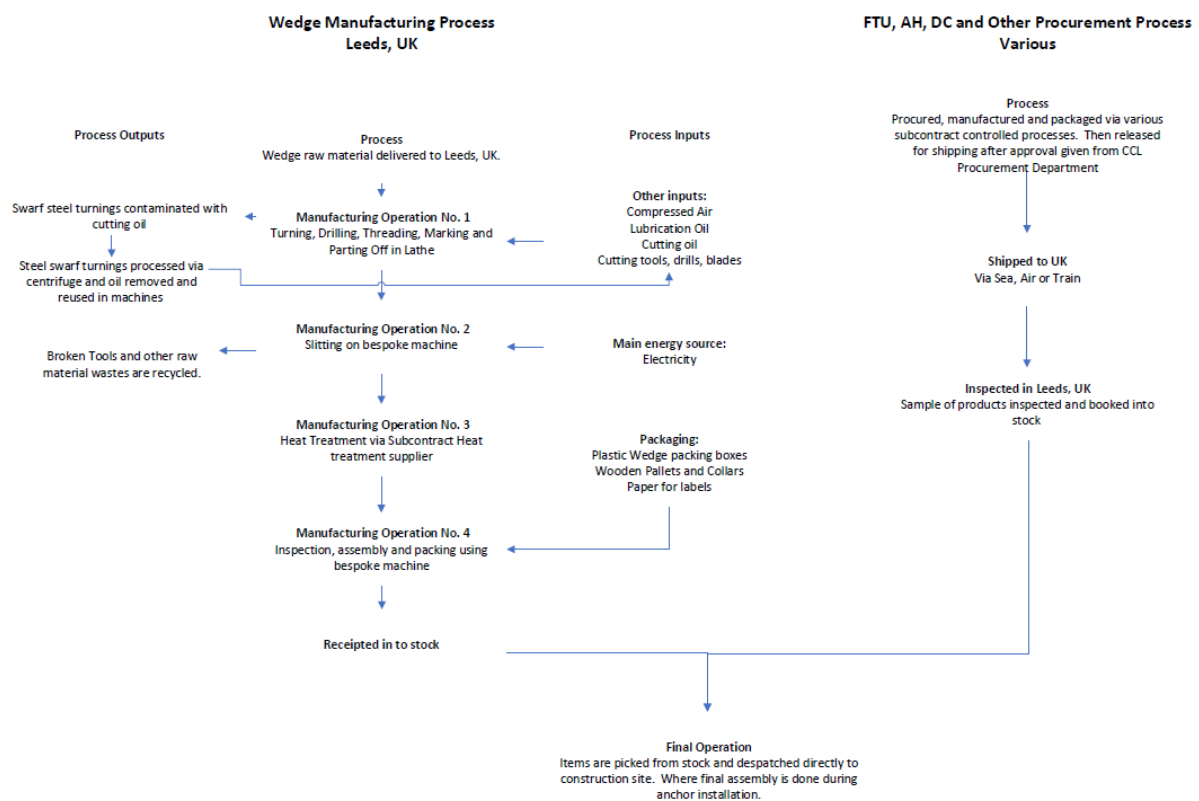
Material/Chemical Input	%
Steel	98%
Plastic	2%

Material composition of all products assessed within this average EPD

Manufacturing Process

Raw wedge material is delivered to the factory in Leeds where it undergoes turning, drilling, threading, marking and parting off in a lathe. Steel Swarf waste is processed and input back into the system. The wedges are then slitted, heat treated and then inspected before packaging and receipted into stock ready for dispatch.

Process flow diagram



Life Cycle Assessment Calculation Rules

Declared unit description

1 kg of anchor as used in post-tensioned cast-in-place and precast concrete applications.

System boundary

This is a cradle to gate EPD, reporting all production life cycle stages of modules from A1 to A3 inclusive in accordance with EN 15804:2012+A1:2013.

Data sources, quality and allocation

Data collected by CCL for the production of the XF and XM Anchors for the period 1st January 2020 to 31st December 2020 has been used for this EPD.

Electricity consumption was determined by measuring the consumption on the manufacturing site for all production lines and weighted proportionally by production of the anchors. The consumption of water is calculated based on the factual consumption.

Figures for the raw materials, ancillary materials and packaging were from actual usages. Allocation of energy, water, and waste has been done according to the provisions of the BRE PCR PN514 and EN 15804.

Secondary data has been drawn from the BRE LINA database v2.0.86. The background LCI datasets are based on ecoinvent v3.2 (2015) which was used for all other material energy and waste data requirements.

Cut-off criteria

All inputs or outputs have been included and all raw materials, packaging and transport, energy, water use and wastes, are included, except for direct emissions to air, water and soil, which are not measured. Upstream extraction and/or processing of inputs are included within the use of the background datasets within LINA.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			GWP	ODP	AP	EP	POCP	ADPE	ADPF
			kg CO ₂ equiv.	kg CFC 11 equiv.	kg SO ₂ equiv.	kg (PO ₄) ³⁻ equiv.	kg C ₂ H ₄ equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	1.85	1.02E-07	0.00786	0.00307	0.00243	2.39E-06	24.8
	Transport	A2	0.307	5.15E-08	0.00518	0.000616	0.000384	2.70E-07	4.44
	Manufacturing	A3	0.0248	8.47E-09	0.000605	0.000384	0.000057	1.73E-07	1.85
	Total (of product stage)	A1-3	2.18	1.62E-07	0.0136	0.00407	0.00287	2.83E-06	31.1

GWP = Global Warming Potential;
 ODP = Ozone Depletion Potential;
 AP = Acidification Potential for Soil and Water;
 EP = Eutrophication Potential;

POCP = Formation potential of tropospheric Ozone;
 ADPE = Abiotic Depletion Potential – Elements;
 ADPF = Abiotic Depletion Potential – Fossil Fuels;

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	0.985	5.00E-06	0.985	26.9	0	26.9
	Transport	A2	0.097	1.40E-07	0.098	4.51	0	4.51
	Manufacturing	A3	1.23	3.12E-07	1.23	2.35	0	2.35
	Total (of product stage)	A1-3	2.31	5.45E-06	2.31	33.8	0	33.8

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

Parameters describing resource use, secondary materials and fuels, use of water

			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m ³
Product stage	Raw material supply	A1	0	0	0	0.0336
	Transport	A2	0	0	0	0.00105
	Manufacturing	A3	0	0	0	0.000773
	Total (of product stage)	A1-3	0	0	0	0.035

SM = Use of secondary material;
 RSF = Use of renewable secondary fuels;

NRSF = Use of non-renewable secondary fuels;
 FW = Net use of fresh water

LCA Results (continued)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	0.148	0.095	0.0000501
	Transport	A2	0.00188	0.054	0.0000303
	Manufacturing	A3	0.000612	0.0055	0.0000118
	Total (of product stage)	A1-3	0.150	0.156	0.0000922

HWD = Hazardous waste disposed;
 NHWD = Non-hazardous waste disposed;
 RWD = Radioactive waste disposed

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0	0	0	0
	Transport	A2	0	0	0	0
	Manufacturing	A3	0	0.059	0	0
	Total (of product stage)	A1-3	0	0.059	0	0

CRU = Components for reuse;
 MFR = Materials for recycling

MER = Materials for energy recovery;
 EE = Exported Energy

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.