

Statement of Verification

BREG EN EPD No.: 000463

Issue 01

This is to verify that the
Environmental Product Declaration
provided by:
MiTek Industries Limited



is in accordance with the requirements of:
EN 15804:2012+A1:2013
and
BRE Global Scheme Document SD207

This declaration is for:
1 kg of Punched Metal Plate Fasteners (PMPF) or 1 kg of Posi-Strut Webs

Company Address

MiTek Industries Limited
Grazebrook Industrial Park
Peartree Lane
Dudley
DY2 0XW
United Kingdom



MiTek[®]

Signed for BRE Global Ltd

Emma Baker
Operator

29 September 2022
Date of this Issue

29 September 2022
Date of First Issue

28 September 2027
Expiry Date



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Environmental Product Declaration

EPD Number: 000463

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013
Commissioner of LCA study	LCA consultant/Tool
MiTek Industries Limited Grazebrook Industrial Park Peartree Lane Dudley DY2 0XW United Kingdom	LCA consultant: Roger Connick Tool: BRE LINA v2.0
Declared Unit	Applicability/Coverage
1 kg of Punched Metal Plate Fasteners (PMPF) or 1 kg of Posi-Strut Webs	Product specific
EPD Type	Background database
Cradle to Gate with options	ecoinvent v3.2
Demonstration of Verification	
CEN standard EN 15804 serves as the core PCR ^a	
Independent verification of the declaration and data according to EN ISO 14025:2010 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
(Where appropriate ^b)Third party verifier: Nigel Jones	
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)	
Comparability	
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A1:2013 for further guidance	

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 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"/>

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

MiTek Industries Limited
 Grazebrook Industrial Park
 Peartree Lane
 Dudley
 DY2 0XW
 United Kingdom

Construction Product

Product Description

Punched Metal Plate Fasteners (PMPF)

A connector formed from metal plate having integral projections punched out in one direction perpendicular to the base of the plate and used to join two or more pieces of timber of the same thickness in the same plane.

Posi-Strut Webs

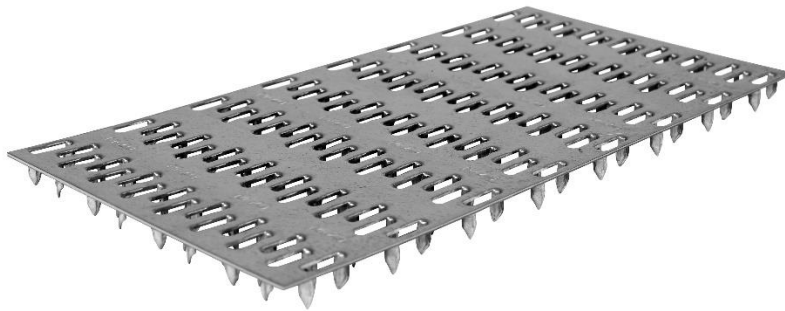
A Posi-Strut® Web is a thin gauge steel member produced in end-joined pairs, called V-webs, but may also be used individually. They are used in the fabrication of Posi-Joists, which are shallow parallel-chord trusses in which solid timber flanges are connected to each other by a system of triangulation provided by the Posi-Strut Webs. The web-flange connections are formed by the pressed insertion of integral nailplates of the webs into the timber flanges. The range of Posi-Strut Webs is defined by the clear distance between the timber flanges into which they are inserted to form Posi-Joists.

Technical Information (Punched Metal Plate Fasteners)

Property	Value, Unit
Plate types	M20, M20H, B90, M16H & GN14
Nominal thickness	1 mm - 2 mm
0.2 %-proof strength	250 - 350 MPa
Tensile strength	330 - 420 MPa
Corrosion protection	Z275 zinc coating
Harmonised technical standard	EN14545:2008

Technical Information (Posi-Strut Webs)

Property	Value, Unit
Posi-Strut Web types	PS8, PS9, PS10, PS10+, PS12, PS14 & PS16
Nominal thickness	0.9 mm - 1 mm
0.2 %-proof strength	250 - 350 MPa
Tensile strength	330 - 420 MPa
Corrosion protection	Z275 zinc coating
Harmonised technical standard	European Assessment Document (EAD) 130031-00-0304 'Metal Web Beams and Columns'.



Main Product Contents

Material/Chemical Input	%
Galvanised Steel	100

Manufacturing Process

The manufacturing process for Nail Plates and Timber Connectors commences with the issue of an electronically generated internal Works Order to the shopfloor, stating the production requirements. Pre-purchased externally sourced zinc coated, mild steel slit coil of the correct grade and specification, is released from our stock and taken to the designated Press-Line.

The Works Order also indicates to the Box Maker which cardboard cartons are required for construction and printing and the quantity required to satisfy the order. When assembled, the boxes are transferred to the designated Press-Line.

Press-Lines are made up of a range of Power Presses of varying tonnage capacity, and ancillary equipment such as a de-coiler and straightener. Press selection is dependent upon the plate type and size required. The machinery will be started, and the slit steel coil loaded onto the automatic de-coiler, fed through the straightener and into the press tooling by the Press Setter. The Setter operates the Press to produce a First-Off sample, to confirm that the product is compliant to specification and the production run can proceed. A Press Operator is assigned to commence production.

As the steel passes through the tooling automatically, the press cycles, and the tooling strikes the steel to produce the finished component. The finished component is collected at the front of the press by the Press Operator, who manually packs the product into the pre-assembled boxes. The boxes are pre-printed with the identification and details of the box contents. When filled, the completed boxes are manually loaded onto a pallet by the Linesman, until the pallet is packed with the required quantity of boxed product. Using a Forklift Truck, the pallet is transferred to the Warehouse for storage and despatch.

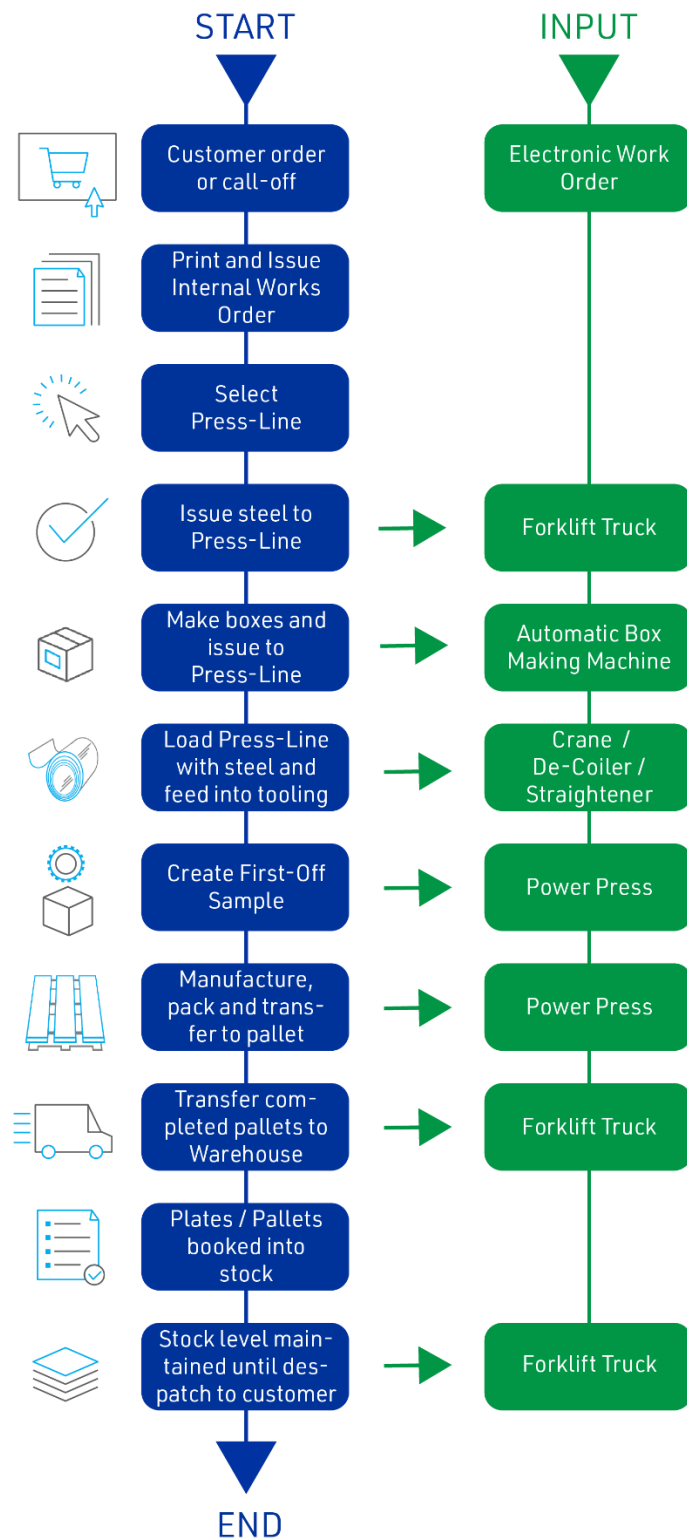
On arrival in the Warehouse, the goods are booked onto the electronic stock system. The goods are stored on racking until being called-off or picked upon receipt of a Customer's Order, in which case, the order will be manually built from stock to the customers requirement, palletised and shrunk wrapped for protection and security. The despatch documentation will be raised electronically, and the goods are now ready for despatch.

MiTek Industries Limited Dudley does not operate its own transport vehicles. Therefore, transporting of goods will be via haulier, carrier, or in certain instances, the customer will collect.

The same process and principle will apply to the manufacture of the Posi-Strut components, except where the finished product is packed in larger, manually constructed cardboard containers, stamped with the content's identification. Posi-Strut products remain in the same container from packing, through to delivery to the customer.

Process flow diagram

Process Flow and Input



Life Cycle Assessment Calculation Rules

Declared unit description

1 kg of Punched Metal Plate Fasteners (PMPF) or 1 kg of Posi-Strut Webs

System boundary

This is a cradle-to-gate with options EPD, reporting all production life cycle stages (modules A1 to A3) and construction process stage (module A4) in accordance with EN 15804:2012+A1:2013.

Data sources, quality and allocation

Specific primary data derived from the Punched Metal Plate Fasteners (PMPF) & Posi-Strut Webs production process in Dudley, UK have been modelled using BRE LINA v2.0 and the BRE LINA database v2.0.92. In accordance with the requirements of EN15804, the most current available data has been used. The manufacturer-specific data from MiTek Industries Limited covers a period of one and a half years (01/01/20 – 30/06/21). Secondary data has been obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production) from the ecoinvent 3.2 database. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs, according to the requirements specified in EN15804. Calculations were performed to enable allocation of processes to the Punched Metal Plate Fasteners (PMPF) & Posi-Strut Web products. Allocation procedures were by physical allocation and are according to EN15804 and are based on ISO14044 guidance.

Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Very Good	Data from area under study.	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e. identical technology).	n/a
Fair	n/a	n/a	There is approximately 5-6 years between the ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

Specific European and UK datasets have been selected from the ecoinvent LCI for this LCA. The quality level of geographical and technical representativeness is therefore Very Good. The quality level of time representativeness is Fair as the background LCI datasets are based on ecoinvent v3.2 which was compiled in 2015. Therefore, there is approximately 5-6 years between the ecoinvent LCI reference year and the time period for which the LCA was undertaken.

Cut-off criteria

All raw materials, packaging materials, transportation, process energy, general energy, water use, production and non-production waste have been included where appropriate. Only direct emissions to air, water and soil, which are not measured, have been excluded.

LCA Results

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	2.23e+0	1.44e-7	2.60e-2	9.78e-3	2.36e-3	3.25e-4	2.98e+1
	Transport	A2	2.97e-3	5.46e-10	9.92e-6	2.62e-6	1.73e-6	7.82e-9	4.48e-2
	Manufacturing	A3	4.14e-2	5.81e-9	1.92e-4	7.12e-5	2.63e-5	1.96e-7	7.94e-1
	Total (of product stage)	A1-3	2.28e+0	1.51e-7	2.62e-2	9.86e-3	2.38e-3	3.25e-4	3.07e+1
Construction process stage	Transport	A4	1.67e-2	3.08e-9	5.59e-5	1.48e-5	9.75e-6	4.40e-8	2.53e-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	2.39e+0	7.22e-6	2.39e+0	3.16e+1	0.00e+0	3.16e+1
	Transport	A2	5.95e-4	2.22e-9	5.95e-4	4.45e-2	0.00e+0	4.45e-2
	Manufacturing	A3	1.53e-1	1.03e-7	1.53e-1	9.01e-1	0.00e+0	9.01e-1
	Total (of product stage)	A1-3	2.54e+0	7.33e-6	2.54e+0	3.26e+1	0.00e+0	3.26e+1
Construction process stage	Transport	A4	3.35e-3	1.25e-8	3.35e-3	2.51e-1	0.00e+0	2.51e-1

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

LCA Results (continued)

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	0.00e+0	0.00e+0	0.00e+0	5.85e-2
	Transport	A2	0.00e+0	0.00e+0	0.00e+0	9.72e-6
	Manufacturing	A3	0.00e+0	0.00e+0	0.00e+0	2.82e-4
	Total (of product stage)	A1-3	0.00e+0	0.00e+0	0.00e+0	5.88e-2
Construction process stage	Transport	A4	0.00e+0	0.00e+0	0.00e+0	5.47e-5

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

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

Other environmental information describing waste categories						
			HWD	NHWD	RWD	
			kg	kg	kg	
Product stage	Raw material supply	A1	5.09e-1	1.99e-1	6.73e-5	
	Transport	A2	1.88e-5	2.09e-3	3.09e-7	
	Manufacturing	A3	4.54e-4	2.82e-3	4.02e-6	
	Total (of product stage)	A1-3	5.10e-1	2.04e-1	7.16e-5	
Construction process stage	Transport	A4	1.06e-4	1.18e-2	1.74e-6	

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	0.00e+0	0.00e+0	0.00e+0	0.00e+0
	Transport	A2	0.00e+0	0.00e+0	0.00e+0	0.00e+0
	Manufacturing	A3	0.00e+0	2.14e-2	0.00e+0	0.00e+0
	Total (of product stage)	A1-3	0.00e+0	2.14e-2	0.00e+0	0.00e+0
Construction process stage	Transport	A4	0.00e+0	0.00e+0	0.00e+0	0.00e+0

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Additional information

Individual product calculations

The LCA results listed in the tables above are for MiTek Industries Limited's processing of 1 kg of galvanised steel. The end-user of this EPD can therefore use these results to calculate bespoke impact profiles for each MiTek Industries Limited product listed in the tables below. The LCA results for each EN15804 indicator will need to be multiplied by the mass per unit of the respective product:

Punched Metal Plate Fasteners (PMPF)

Plate Type	Weight (multiplier) per m ² of plate
M20	7.85
M20H	7.85
B90	10.05
M16H	11.77
GN14	15.7

Posi-Strut Webs

Type of Posi-Strut Web	Weight (multiplier) per V-web
PS8	0.325
PS9	0.287
PS10	0.288
PS10+	0.322
PS12	0.354
PS14	0.454
PS16	0.570

Transport to site scenario

MiTek transports the finished Punched Metal Plate Fasteners (PMPF) & Posi-Strut Webs from the manufacturing facility in Dudley, UK to distribution centres in Ruiz, France and Tranås, Sweden (Posi-Strut Webs only). The products are then sold to clients and transported to construction sites across Europe.

This EPD contains a set of results for module A4 based on a distance and mode of 100km by lorry. This is designed to allow flexibility for end-users of the EPD to calculate bespoke results for the specific route and distance their product has taken from the manufacturing site in Dudley, UK.

Interpretation

The bulk of the environmental impacts and primary energy demand are attributed to the upstream manufacturing process of the galvanised steel, covered by information modules A1-A3 of EN15804:2012+A1:2013.

Scenarios and additional technical information

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
A4 – Transport to the building site	MiTek transport the finished products to their distribution centres in Ruitz, France and Tranås, Sweden. The products are then sold and transported to construction sites across Europe. No data was available for the average transport distance from the warehouses to construction sites, and since every journey will be different, a distance and mode of 100km by lorry has been modelled. This will allow end-users of the EPD to calculate their own bespoke impacts for module A4 based on the specific route and distance their product has taken.		
	Diesel / Lorry	Litres of diesel per km	0.227
	Distance	km	100
	Capacity utilisation (incl. empty returns)	%	26
	Bulk density of transported products	kg/m ³	600

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.

BSI. Timber structures – connectors – requirements. BS EN 14545:2008. London, BSI, 2008.

EOTA. Metal Web Beams and Columns. European Assessment Document (EAD) 130031-00-0304. EU, EOTA, 2018.

Pre Consultants bv. SimaPro 8 LCA Software 2013. <http://www.pre-sustainability.com>

ecoinvent Centre. Swiss Centre for life Cycle Inventories. <http://www.ecoinvent.org>