

## Statement of Verification

BREG EN EPD No.: 000188  
ECO EPD Ref. No. 00000675

Issue 01

This is to verify that the

### Environmental Product Declaration

provided by:

**Celsa Steel UK**



is in accordance with the requirements of:

**EN 15804:2012+A1:2013**

and

**BRE Global Scheme Document SD207**

This declaration is for:

**Steel Products manufactured at the Section Mill**

### Company Address

Castle Works  
East Moor Road  
Cardiff  
CF24 5NN  
United Kingdom



**CELSA  
STEEL UK**

Signed for BRE Global Ltd

Emma Baker  
Operator

05 April 2018  
Date of this Issue

05 April 2018  
Date of First Issue

04 April 2023  
Expiry Date



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## Environmental Product Declaration

**EPD Number: 000188**

### 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
Celsa Steel UK Ltd Castle Works East Moors Road Cardiff CF24 5NN United Kingdom	Roger Connick BRE Bucknalls Lane WD25 9XX United Kingdom <a href="http://www.bre.co.uk">www.bre.co.uk</a>
Declared/Functional Unit	Applicability/Coverage
1 tonne of Steel Products manufactured at the Section Mill	Product Average
EPD Type	Background database
Cradle to gate	ecoinvent

#### Demonstration of Verification

CEN standard EN 15804 serves as the core PCR <sup>a</sup>

Independent verification of the declaration and data according to EN ISO 14025:2010

Internal  External

(Where appropriate <sup>b</sup>)Third party verifier:  
Julia Barnard

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
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Note: Ticks indicate the Information Modules declared.

## Manufacturing sites

Section Mill  
Tremorfa Works  
Seawall Road  
Cardiff  
CF24 5TH

Melt Shop  
Tremorfa Works  
Seawall Road  
Cardiff  
CF24 5TH

## Construction Product

### Product Description

Three types of hot rolled channels are produced at the Section Mill: Heavy, Light and UPN channels are mainly used in steel and composite construction, although they have numerous applications including the manufacture of cranes, handrail posts and traffic sign posts. Celsa also manufacture hot rolled heavy (equal) and unequal angles. These are mainly used in construction, however as with flat bars and channels, they are used in numerous applications including the construction of electricity pylons, cranes, roofs, and also in structural design including steel frames, brackets, bracing, trim and reinforcements. CELSA Flat bars have numerous applications in sectors as varied as the automobile industry, the naval industry, construction, agriculture, mining and metal joinery.

### Technical Information

Property	Value, Unit
Steel Grades (BS EN 10025-2004)	S235JR & JO, S275JR & JO, S355JR, JO & J2
Size (depth options)	80, 100, 120 & 140 mm
Size (width options)	45, 50, 55 & 60 mm
Web thickness	6 mm, 6 mm, 7 mm, 7 mm
Flange thickness	8 mm, 8.5 mm, 9 mm, 10 mm
Length	6.1 m and 12.2 m (special lengths available on request)
Length tolerance	-0 + 100 mm

Linear mass density	8.6 kg (80 mm), 10.6 kg (100 mm), 13.4 kg (120 mm) & 16 kg (140 mm)
Size & Tolerance Standard (BS EN 10279:2000, BS 4360:1990)	> 150 mm

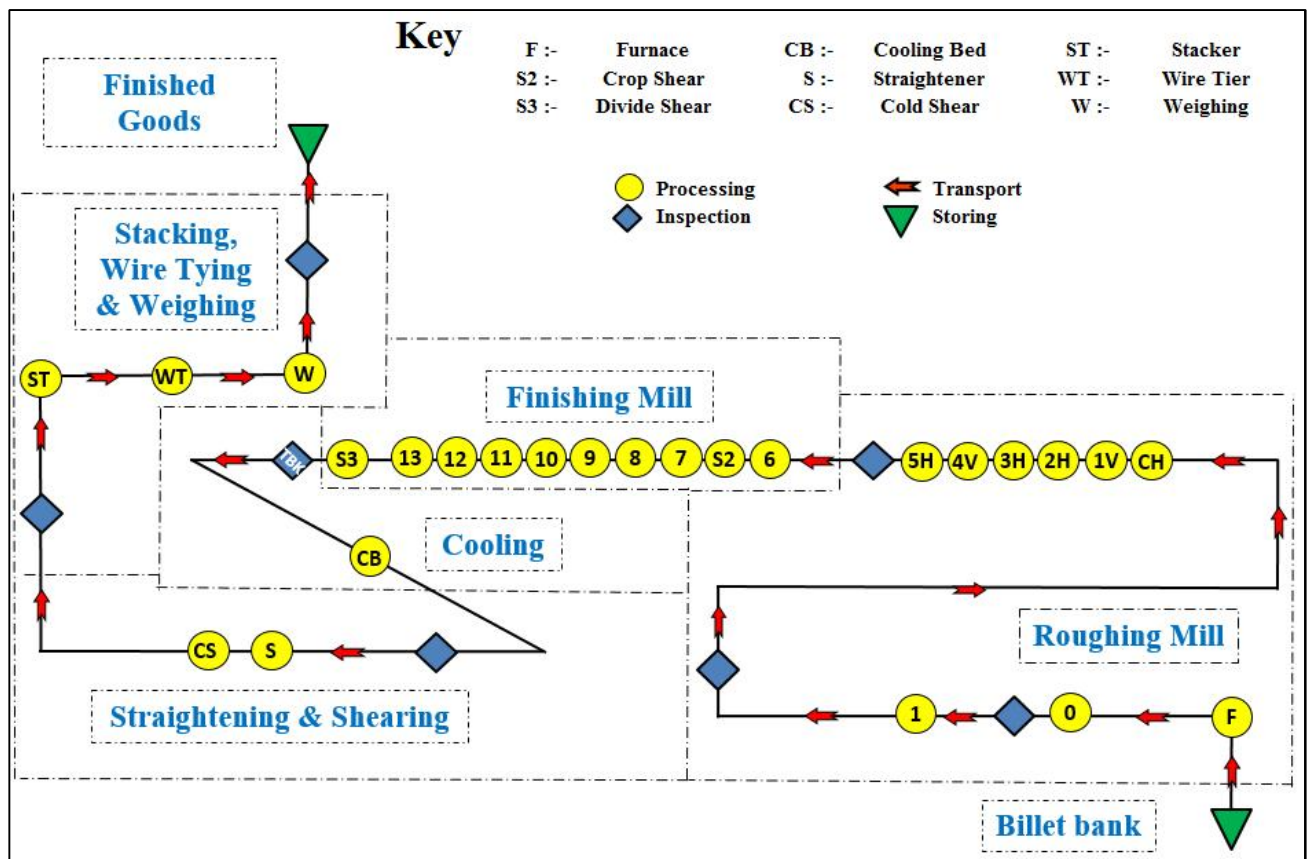
**Main Product Contents**

Material/Chemical Input	%
Fe	95
FeSi, SiMn, CuSi, FeB, Al, FeV, C and other charge additives	5

**Manufacturing Process**

Steel billets from the Melt Shop are reheated in a gas-fired furnace at the Section Mill. Reheating makes the steel softer and more deformable so that the final shape can be produced more economically and by using less energy. Once up to temperature the billets are pushed into the rolling stands, each of which has a pair of grooved cylindrical steel rolls. Grooved rolls are used to shape the stock as it passes through the rolling line. This process is repeated continually over several stands, until the required dimensions for the sections and merchant bar products (such as angles, flats and channels) are achieved. After rolling the products are cooled in still air on a cooling bed, prior to in-line roller straightening, bundling and storage for dispatch.

**Process flow diagram**



## Life Cycle Assessment Calculation Rules

### Declared / Functional unit description

1 tonne of Steel Products manufactured at the Section Mill

### System boundary

In accordance with the modular approach as defined in EN 15804:2012, this cradle to gate EPD includes the processes covered in the manufacturing site and product stage A1 to A3.

### Data sources, quality and allocation

Specific primary data derived from the Celsa Steel UK Ltd production process in Cardiff have been modelled using Simapro v8.2 LCA software. In accordance with the requirements of EN15804, the most current available data has been used. The manufacturer-specific data from Celsa Steel UK Ltd covers a period of 1 year (01/01/16 – 31/12/16). 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 confirm to the system boundary and the criteria for the exclusion of inputs and outputs according to the requirements specified in EN 15804. Calculations were performed to enable allocation of processes to the steel products. Allocation procedures were by physical allocation and are according to EN 15804 and are based on ISO 14044 guidance.

### Cut-off criteria

No inputs or outputs have been excluded. All raw materials, ancillary materials, packaging materials and associated transport to the plants, process energy and water use, direct production waste, and emissions are included.

## 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 <sub>2</sub> equiv.	kg CFC 11 equiv.	kg SO <sub>2</sub> equiv.	kg (PO <sub>4</sub> ) <sup>3-</sup> equiv.	kg C <sub>2</sub> H <sub>4</sub> equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	502	3.82E-05	2.78	0.716	0.249	0.000876	7260
	Transport	A2	0.0124	2.02E-09	0.000263	2.88E-05	1.82E-05	3.83E-09	0.177
	Manufacturing	A3	181	9.4E-06	0.547	0.126	0.052	7.56E-05	1600
	Total (of product stage)	A1-3	683	4.76E-05	3.33	0.842	0.301	0.000951	8870

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	605	0.000932	605	9130	0.00	9130
	Transport	A2	0.00442	4.48E-09	0.00442	0.181	0.00	0.181
	Manufacturing	A3	78.3	0.000144	78.3	1820	0.00	1820
	Total (of product stage)	A1-3	684	0.00108	684	11000	0.00	11000

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 <sup>3</sup>
Product stage	Raw material supply	A1	1190	0.00	0.00	17.6
	Transport	A2	0.00	0.00	0.00	4.32E-05
	Manufacturing	A3	0.00	0.00	0.00	0.407
	Total (of product stage)	A1-3	1190	0.00	0.00	18.1

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	16.5	43.4	0.000488
	Transport	A2	7.47E-05	0.000131	2.89E-09
	Manufacturing	A3	0.475	1.74	0.0000726
	Total (of product stage)	A1-3	17	45.1	0.000561

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	154	21.9	0.00	0.00
	Transport	A2	0	0	0.00	0.00
	Manufacturing	A3	51.8	23	0.00	0.00
	Total (of product stage)	A1-3	206	44.8	0.00	0.00

CRU = Components for reuse;  
 MFR = Materials for recycling

MER = Materials for energy recovery;  
 EE = Exported Energy

## Summary, comments and additional information

### Interpretation

The steel billet input is responsible for the majority of environmental impact associated with the manufacture of the steel products, with impacts also arising from fuel use and emissions to air from the rolling and cutting processes.

This is illustrated by Figure 1 below which highlights that in the product stage, across the impact categories raw material supply (A1) is responsible for the greatest percentage of overall impact. Manufacturing (A3) is responsible for the second highest proportion of total impact across the impact categories.

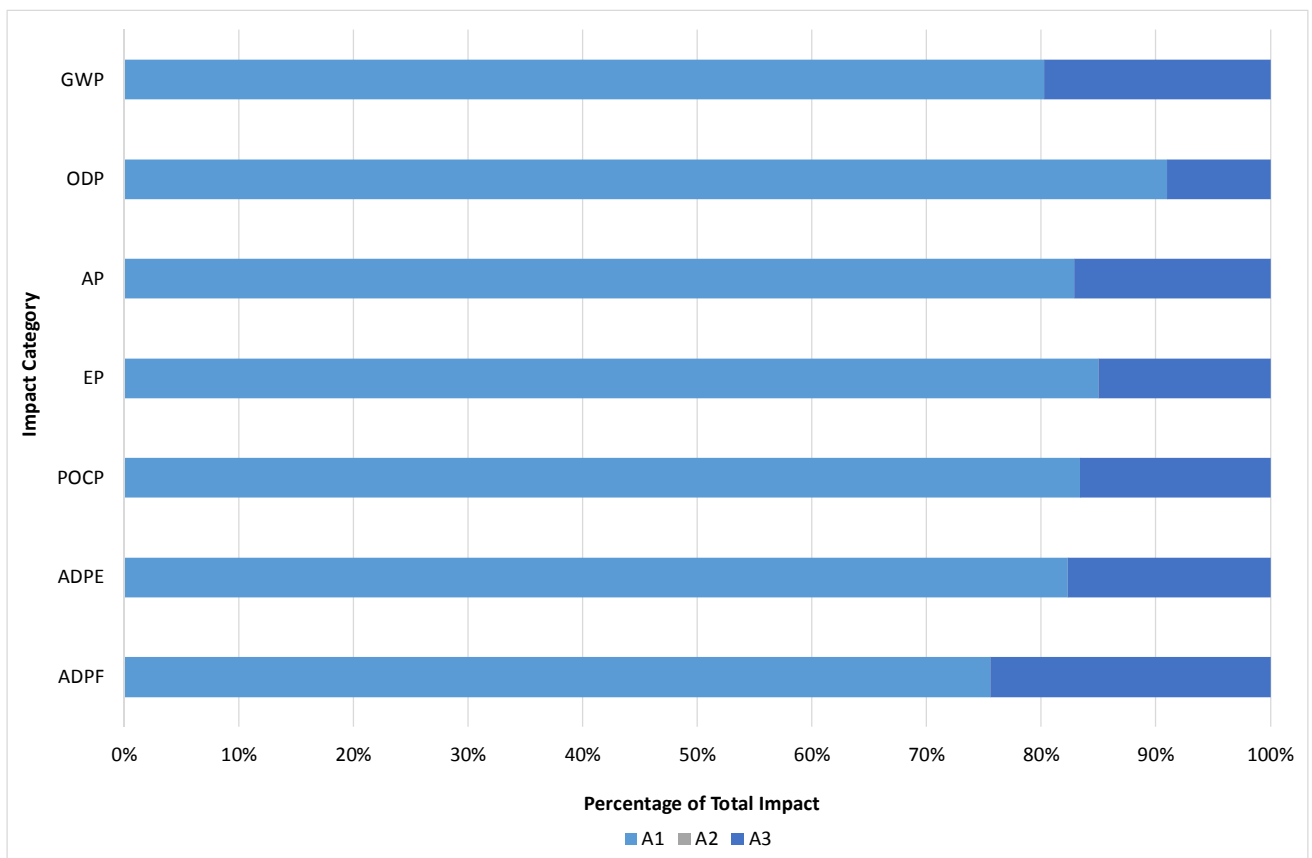


Figure 1: Percentage of Total Impact for Information Modules A1-A3 in GWP, ODP, AP, EP, POCP, ADPE and ADFP Impact Categories for steel products manufactured at the Section Mill.



## References

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