Statement of Verification

BREG EN EPD No.: 000079 Issue 3
ECO EPD Ref. No. 000240

This is to verify that the

Environmental Product Declaration

provided by:

Habas A.S (member of UK CARES)

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

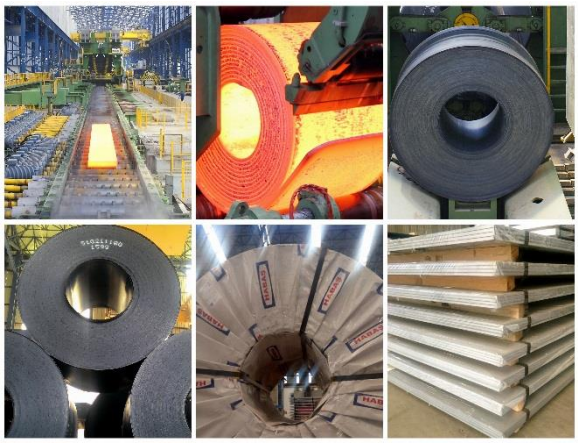
BRE Global Scheme Document SD207

This declaration is for:

Hot Rolled Flat Steel (secondary production route – scrap)

Company Address

Sanayi Caddesi No:26
Bozkoy – Aliaga
Izmir
35800



HABAŞ

Signed for BRE Global Ltd	Emma Baker Operator	20 May 2022 Date of this Issue
27 February 2017 Date of First Issue		31 August 2022 Expiry Date

BRE Global Verified EPD

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ECO PLATFORM EPD EN 15804 VERIFIED

Environmental Product Declaration

EPD Number: 000079

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**
UK CARES Pembroke House 21 Pembroke Road Sevenoaks Kent, TN13 1XR UK	UK CARES EPD Tool thinkstep UK Ltd Euston Tower - Level 33, 286 Euston Road London, NW1 3DP www.thinkstep.com
Declared/Functional Unit	**Applicability/Coverage**
1 tonne of hot rolled flat steel product manufactured by the secondary (scrap-based) production route.	Manufacturer-specific product.
EPD Type	**Background database**
Cradle to Gate with options	GaBi

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 ☐Internal ☒ External
(Where appropriate [b]) Third party verifier: Dr Fei Zhang
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
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		☑

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Habas A.S (member of UK CARES)

Sanayi Caddesi No.26 Bozkoy - Aliaga Izmir 35800 Turkey	

Construction Product:

Product Description

Hot Rolled Flat Steels in coils, sheets, plates and other required forms are non-alloy or low-alloy steel products. Hot Rolled Flat Steel Coil (according to product standards listed in Sources of Additional Information) that is obtained from scrap, melted in an Electric Arc Furnace (EAF) followed by hot rolling.

Hot Rolled Flat Steel Coil is produced as a feedstock for cold rolled flat steel coil and coated steel coil, but also for direct use in a variety of industrial applications including construction, hot and cold forming, gas containers, pressure vessels, steel tubes used in transport and energy pipelines.

The declared unit is 1 tonne of hot rolled flat steel coil as used in a variety of industrial applications.

Technical Information

Property	Value, Unit
Production route	EAF
Density	7850 kg/m^3
Modulus of elasticity	210000 N/mm^2
Weldability, Carbon Equivalent (Ceq) EN 10025-2:2004 grades S235JR, S235J0, S235J2, S235JR(Cu), S235JRC, S235J2C+N, S235J2+N, S275JR, S275J0, S275J2, S275JR(Cu), S275JRC, S275J2C+N, S275J2+N, S355JR, S355J0, S355J2, S355JR(Cu), S355JRC, S355J2C+N, S355J2+N (for product thickness≥1.1mm &≤25.4mm) EN 10025-4:2004 grades S275M, S275ML, S355M, S355ML (for product thickness≥1.1mm &≤25.4mm) EN 10149-2:2013 grades S315MC, S355MC, S420MC, S460MC	max 0.35% for S235 grade series max 0.40% for S275 grade series max 0.45% for S355 grade series max 0.34% for S275M, S235ML max 0.39% for S355M, S355ML N/A
Yield Strength EN 10025-2:2004 grades S235JR, S235J0, S235J2, S235JR(Cu), S235JRC, S235J2C+N, S235J2+N, S275JR, S275J0, S275J2, S275JR(Cu), S275JRC, S275J2C+N, S275J2+N, S355JR, S355J0, S355J2, S355JR(Cu), S355JRC, S355J2C+N, S355J2+N (for product thickness ≥1.1mm & <3mm and for thickness ≥3mm & ≤25.4mm) EN 10025-4:2004 grades S275M, S275ML, S355M, S355ML (for product thickness ≥1mm & ≤25.4mm) EN 10149-2:2013 grades S315MC, S355MC, S420MC, S460MC (for product thickness ≥1.1mm & ≤25.4mm)	225 to 235 N/mm^2 for all S235 grade series 265 to 275 N/mm^2 for all S275 grade series 345 to 355 N/mm^2 for all S355 grade series 265 to 275 N/mm^2 for S275M, S275ML 345 to 355 N/mm^2 for S355M, S355ML min 315 N/mm^2 for S315MC min 355 N/mm^2 for S355MC min 420 N/mm^2 for S420MC min 460 N/mm^2 for S460MC
Tensile Strength EN 10025-2:2004 grades S235JR, S235J0, S235J2, S235JR(Cu), S235JRC, S235J2C+N, S235J2+N, S275JR, S275J0, S275J2, S275JR(Cu), S275JRC, S275J2C+N, S275J2+N, S355JR, S355J0, S355J2, S355JR(Cu), S355JRC, S355J2C+N, S355J2+N (for product thickness ≥1.1mm & <3mm and for thickness ≥3mm & ≤25.4mm) EN 10025-4:2004 grades S275M, S275ML, S355M, S355ML (for product thickness ≥1.1mm & ≤25.4mm) EN 10149-2:2013 grades S315MC, S355MC, S420MC, S460MC	360 to 510 N/mm^2 for S235 grade series 410 to 580 N/mm^2 for S275 grade series 470 to 680 N/mm^2 for S355 grade series 370 to 530 N/mm^2 for S275M, S275ML 470 to 630 N/mm^2 for S355M, S355ML 390-510 N/mm^2 for S315MC 430-550 N/mm^2 for S355MC 480-620 N/mm^2 for S420MC 520-670 N/mm^2 for S460MC

%Elongation S235J2, S235JR(Cu), S235JRC, S235J2C+N, S235J2+N, S275JR, S275J0, S275J2, S275JR(Cu), S275JRC, S275J2C+N, S275J2+N, S355JR, S355J0, S355J2, S355JR(Cu), S355JRC, S355J2C+N, S355J2+N (longitudinal test piece L_0=80 mm for thickness 1.1mm & <3mm and longitudinal test piece $L_0=5.65\sqrt{S_0}$ mm for thickness ≥3mm & ≤25.4mm)	min 17 to min 26% for S235 grade series min 15 to min 23% for S275 grade series min 14 to min 22% for S355 grade series
EN 10025-4:2004 grades S275M, S275ML, S355M, S355ML (longitudinal test piece $L_0=5.65\sqrt{S_0}$)	min 24% for S275M, S275ML min 18% for S355M, S355ML
EN 10149-2:2013 grades S315MC, S355MC, S420MC, S460MC (longitudinal test piece L_0=80 mm for thickness 1.1mm & <3mm and longitudinal test piece $L_0=5.65\sqrt{S_0}$ mm for thickness ≥3mm & ≤25.4mm)	min 20 to min 24% for S315MC min 19 to min 23% for S355MC min 16 to min 19% for S420MC min 14 to min 17% for S460MC
Impact Strength KV longitudinal EN 10025-2:2004 grades S235JR, S235J0, S235J2, S235JR(Cu), S235JRC, S235J2C+N, S235J2+N, S275JR, S275J0, S275J2, S275JR(Cu), S275JRC, S275J2C+N, S275J2+N, S355JR, S355J0, S355J2, S355JR(Cu), S355JRC, S355J2C+N, S355J2+N	min 27J at 20˚C for all JR types min 27J at 0˚C for all J0 types min 27J at -20˚C for all J2 types
EN 10025-4:2004 grades S275M, S275ML, S355M, S355ML	M types: min 55J at 20˚C; min 47J at 0˚C; min 43J at -10˚C; min 40J at -20˚C ML types: min 63J at 20˚C; min 55J at 0˚C; min 51J at -10˚C; min 47J at -20˚C; min 40J at -30˚C; min 31J at -40˚C; min 27J at -50˚C
EN 10149-2:2013 grades S315MC, S355MC, S420MC, S460MC (for thickness >6mm & ≤25mm)	min 40J at -20˚C for S315MC, S355MC, S420MC and S460MC
Recycled content (as per ISO 14021:2016)	97.9 %

Main Product Contents

Material/Chemical Input	%
Fe	97
C, Mn, Si, V, Ni, Cu, Cr, Mo and others	3

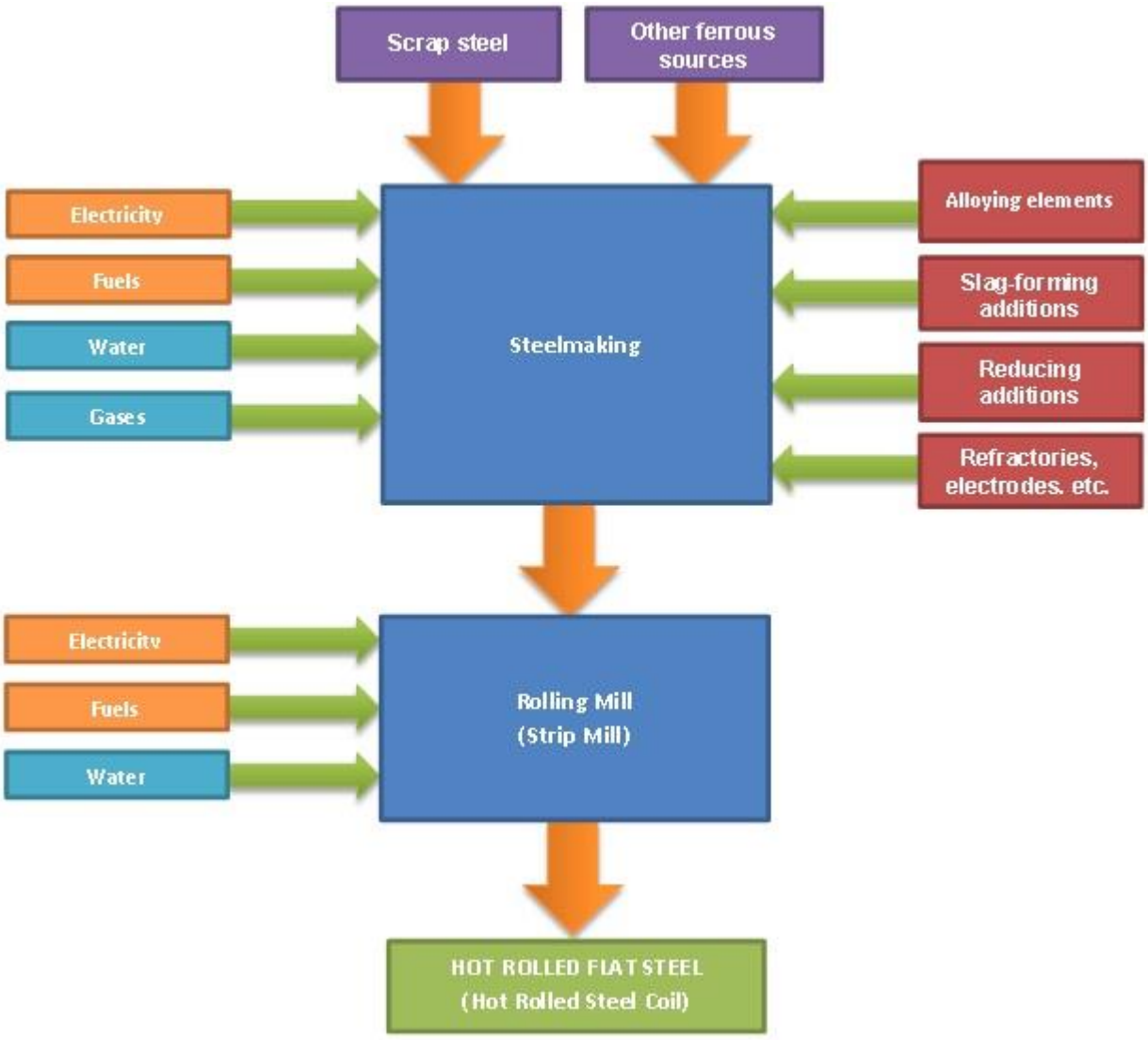
Manufacturing Process

Scrap metal is melted in an electric arc furnace to obtain liquid steel. This is then refined to remove impurities and alloying additions can be added to give the required properties.

Hot metal (molten steel) from the EAF is then cast into steel slabs before being sent to the rolling mill (strip mill) where they are rolled and shaped to the required dimensions for the finished coils of hot rolled flat steel.

Quality assurance and quality control of hot rolled flat steel are maintained according to ISO 9001 and product standards listed in Sources of Additional Information.

Process flow diagram



Construction Installation

Processing and proper use of hot rolled flat steel products depends on the application and should be made in accordance with generally accepted practices, standards and manufacturing recommendations.

During transport and storage of hot rolled flat steel products the usual requirements for securing loads is to be observed.

Use Information

The composition of the hot rolled flat steel products does not change during use.

Hot rolled flat steel products do not cause adverse health effects under normal conditions of use.

No risks to the environment and living organisms are known to result from the mechanical destruction of the hot rolled flat steel product itself.

End of Life

Hot rolled flat steel products can be reused after dismantling, renovating and demolishing and also can be recycled to the same (or higher/lower) quality of steel depending upon the metallurgy and processing of the recycling route.

It is a high value resource so efforts are made to recycle steel scrap rather than disposing of it at EoL. A recycling rate of 92% is typical for hot rolled flat steel products.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

The declared unit is 1 tonne of hot rolled flat steel product manufactured by the secondary (scrap-based) production route.

System boundary

The system boundary of the EPD follows the modular design defined by EN 15804. This is a cradle to gate – with options EPD and thus covers modules from A1 to A3, plus module D.

Data sources, quality and allocation

Data Sources: Manufacturing data of the period 01/01/2017-31/12/2017 has been provided by Habas A.S (member of UK CARES).

Data Quality: Data quality can be described as good. Background data are consistently sourced from thinkstep databases. The primary data collection was thorough, considering all relevant flows and these data have been verified by UK CARES.

Allocation: EAF slag and mill scale are produced as co-products from the steel manufacturing process. Impacts are
allocated between the steel, the slag and the mill scale based on economic value.

Production losses of steel during the production process are recycled in a closed loop offsetting the requirement for external scrap. Specific information on allocation within the background data is given in the GaBi datasets documentation (/GaBi 8 2019/).

Cut-off criteria

On the input side all flows entering the system and comprising more than 1% in total mass or contributing more than 1% to primary energy consumption are considered. All inputs used as well as all process-specific waste and process emissions were assessed. For this reason, material streams which were below 1% (by mass) were captured as well. In this manner the cut-off criteria according to the BRE guidelines are fulfilled.

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_2H_4 equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	812	4.11E-07	3.94	0.769	0.200	3.19E-04	1.12E+04
Construction process stage	Transport	A4	MND	MND	MND	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-603	3.77E-12	-1.41	-0.125	-0.184	3.72E-05	-4.79E+03

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;

LCA Results (continued)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	2.75E+03	0	2.75E+03	1.18E+04	0	1.18E+04
Construction process stage	Transport	A4	MND	MND	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	500	0	500	-4.54E+03	0	-4.54E+03

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	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	605	-7.77E-02	-0.965	2.86
Construction process stage	Transport	A4	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0	0	0	-0.472

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	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.541	80.8	0.229
Construction process stage	Transport	A4	MND	MND	MND
	Construction	A5	MND	MND	MND
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND
	Transport	C2	MND	MND	MND
	Waste processing	C3	MND	MND	MND
	Disposal	C4	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-3.02E-06	-9.47E+00	0.097

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

LCA Results (continued)

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	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0	0	0	0
Construction process stage	Transport	A4	MND	MND	MND	MND
	Construction	A5	MND	MND	MND	MND
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	MND	MND	MND	MND
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0	0	0	0

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Scenarios and additional technical information

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
Module D	It is assumed that 92% of the steel used in the structure is recovered for recycling, while the remainder is landfilled. “Benefits and loads beyond the system boundary” (module D) accounts for the environmental benefits and loads resulting from net steel scrap that is used as raw material in the EAF and that is collected for recycling at end of life. The resulting scrap credit/burden is calculated based on the global “value of scrap” approach (/worldsteel 2011).		

Summary, comments and additional information

Interpretation

Scrap-based Hot Rolled Flat Steel Coil product of Habas A.S. (member of UK CARES) is made via the EAF route. The bulk of the environmental impacts and primary energy demand is attributed to the manufacturing phase, covered by information modules A1-A3 of EN 15804.

References

BRE Global. BRE Environmental Profiles 2013: Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013. PN 514. Watford, BRE, 2014.

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 (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+A1:2018. London, BSI, 2018.

Demolition Energy Analysis of Office Building Structural Systems, Athena Sustainable Materials Institute, 1997.

thinkstep AG; GaBi 8: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Echterdingen, 1992-2019.

GaBi 8: Documentation of GaBi 8: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Echterdingen, 1992-2019. http://www.gabi-software.com/support/gabi/gabi-database-2019-lci-documentation/

International Energy Agency, Energy Statistics 2018. http://www.iea.org

Kreißig, J. und J. Kuemmel (1999): Baustoff-Oekobilanzen. Wirkungsabschaftzung und Auswertung in der Steine-Erden-Industrie. Hrsg. Bundesverband Baustoffe Steine + Erden e.V.

London Metal Exchange, Steel Rebar Prices, January 2019. https://www.lme.com/en-gb/metals/ferrous/

U.S. Geological Survey, Mineral Commodity Summaries, Iron and Steel Slag, January 2006

Sustainability of construction works – Environmental product declarations – Methodology for selection and use of generic data; German version PD CEN/TR 15941:2010. London, BIS, 2010.

REGULATION (EU) No 305/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC..

CARES SCS (Sustainable Constructional Steel) Scheme. Appendix 6 – Operational assessment schedule for the sustainable production of hot rolled flat steel products.

Certificate of Conformity of the Factory Production Control - Certificate number for conformity to EN10025-2:2004, EN 10025:2004-2004 and EN 10149-2-2013 at the time of LCA study – 2195-CPR-1426001

EN 10025-2:2004 - Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels.

EN 10025-4:2004 - Hot rolled products of structural steels - Part 4: Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels.

EN 10149-2:2013 - Hot rolled flat products made of high yield strength steels for cold forming - Part 2: Technical delivery conditions for thermomechanically rolled steels.

ASTM A36 / A36M - 14 Standard Specification for Carbon Structural Steel.

ASTM A572 / A572M - 18 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

ASTM A283 / A283M - 18 Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates

ASTM A1011 / A1011M – 18a Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

ASTM A1018 / A1018M – 18 Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Carbon, Commercial, Drawing, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength