

## Statement of Verification

BREG EN EPD No.: 000078  
ECO EPD Ref. No. 000239

Issue 6

This is to verify that the

### Environmental Product Declaration

provided by:

Colakoglu Metalurji A.S (member of UK CARES)

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

Dilovasi Organiza Sanayi Bolgesi 1. Kisim Goksu  
Caddesi No: 16 &  
5. Kisim D-5007 Sokak No: 15  
Dilovasi / Kocaeli



Signed for BRE Global Ltd

Emma Baker  
Operator

05 December 2022

Date of this Issue

27 February 2017

Date of First Issue

30 June 2023

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](mailto: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 checked="" type="checkbox"/>

Note: Ticks indicate the Information Modules declared.

## Manufacturing site(s)

Colakoglu Metalurji A.S (member of UK CARES)

Dilovasi Organize Sanayi Bolgesi 1. Kisim  
Goksu Caddesi No:16 &  
5. Kisim D-5007 Sokak No:15  
Dilovasi / Kocaeli  
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
<b>Production route</b>	EAF
<b>Density</b>	7850 kg/m <sup>3</sup>
<b>Modulus of elasticity</b>	210000 N/mm <sup>2</sup>
<b>Weldability, Carbon Equivalent (Ceq)</b> EN 10025-2:2004 grades S235JR, S235J0, S235J2, S275JR, S275J0, S275J2, S355JR, S355J0, S355J2; S235JRC, S235J0C, S235J2C, S275JRC, S275J0C, S275J2C and S355JRC, S355J0C, S355J2C (for product thickness ≥1mm & ≤26mm)  EN 10025-5-2:2004 grades S355J0WP, S355J2WP (for product thickness ≥1mm & ≤12mm)	max 0.35% for S235 grade series max 0.40% for S275 grade series max 0.45% for S355 grade series  max 0.52% for all grades and for all thicknesses
<b>Yield Strength</b> EN 10025-2:2004 grades S235JR, S235J0, S235J2, S275JR, S275J0, S275J2, S355JR, S355J0, S355J2; S235JRC, S235J0C, S235J2C, S275JRC, S275J0C, S275J2C and S355JRC, S355J0C, S355J2C (for product thickness ≥1mm & ≤16mm and for thickness >16mm & ≤26mm)  EN 10025-5-2:2004 grades S355J0WP, S355J2WP (for product thickness ≥1mm & ≤12mm)	225 to 235 N/mm <sup>2</sup> for S235 grade series 265 to 275 N/mm <sup>2</sup> for S275 grade series 345 to 355 N/mm <sup>2</sup> for S355 grade series  min 355 N/mm <sup>2</sup> for S355J0WP, S355J2WP
<b>Tensile Strength</b> EN 10025-2:2004 grades S235JR, S235J0, S235J2, S275JR, S275J0, S275J2, S355JR, S355J0, S355J2; S235JRC, S235J0C, S235J2C, S275JRC, S275J0C, S275J2C and S355JRC, S355J0C, S355J2C (for product thickness ≥1mm & <3mm and for thickness ≥3mm & ≤26mm)  EN 10025-5-2:2004 grades S355J0WP, S355J2WP (for product thickness ≥1mm & <3mm and for thickness ≥3mm & ≤26mm)	360 to 510 N/mm <sup>2</sup> for S235 grade series 410 to 580 N/mm <sup>2</sup> for S275 grade series 470 to 680 N/mm <sup>2</sup> for S355 grade series  470-680 N/mm <sup>2</sup> for S355J0WP, S355J2WP
<b>%Elongation</b> EN 10025-2:2004 grades S235JR, S235J0, S235J2, S275JR, S275J0, S275J2, S355JR, S355J0, S355J2; S235JRC, S235J0C, S235J2C, S275JRC, S275J0C, S275J2C and S355JRC, S355J0C, S355J2C (longitudinal test piece L <sub>0</sub> =80 mm for thickness ≥1mm & <3mm and longitudinal test piece L <sub>0</sub> =5.65√S <sub>0</sub> mm for thickness ≥3mm & ≤26mm)  EN 10025-5-2:2004 grades S355J0WP, S355J2WP (min, longitudinal test piece L <sub>0</sub> =80 mm for thickness >1.5mm & <3mm; longitudinal test piece L <sub>0</sub> =5.65√S <sub>0</sub> mm for thickness ≥3mm & ≤26mm)	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  min 16 to min 22 for S355J0WP, S355J2WP

Property	Value, Unit
<b>Impact Strength KV longitudinal</b> EN 10025-2:2004 grades S235JR, S235J0, S235J2, S275JR, S275J0, S275J2, S355JR, S355J0, S355J2; S235JRC, S235J0C, S235J2C, S275JRC, S275J0C, S275J2C and S355JRC, S355J0C, S355J2C  EN 10025-5-2:2004 grades S355J0WP, S355J2WP	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  min 27J at 0°C for S355J0WP min 27J at -20°C for S355J2WP
<b>Recycled content (as per ISO 14021:2016)</b>	74.9 %

### Main Product Contents

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

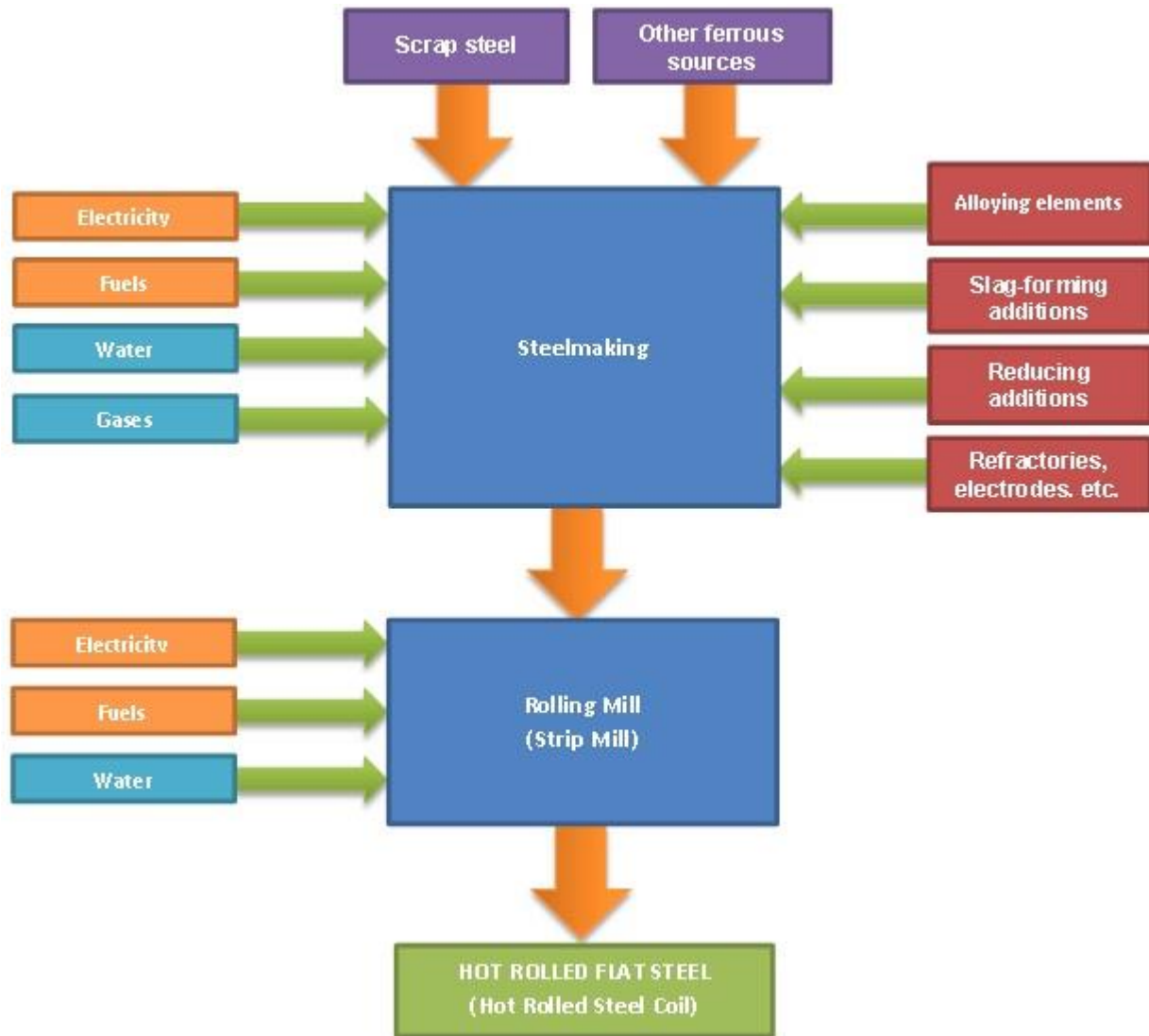
### Manufacturing Process

Scrap metal and/or DRI and/or HBI 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 Colakoglu Metalurji 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 <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	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	1.15E+03	4.97E-07	3.80	0.382	0.303	2.15E-04	1.32E+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	-757	4.73E-12	-1.78	-0.157	-0.231	4.67E-05	-6.01E+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	1.38E+03	0	1.38E+03	1.37E+04	0	1.37E+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	628	0	628	-5.70E+03	0	-5.70E+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 <sup>3</sup>
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	525	-0.078	-0.948	2.53
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	-5.92E-01

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	0.275	59.6	0.195
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	-3.79E-06	-11.9	0.122

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	<p>It is assumed that 92% of the steel used in the structure is recovered for recycling, while the remainder is landfilled.</p> <p>“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.</p> <p>The resulting scrap credit/burden is calculated based on the global “value of scrap” approach (/worldsteel 2011).</p>		

## Summary, comments and additional information

### Interpretation

Scrap-based Hot Rolled Flat Steel Coil product of Colakoglu Metalurji 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.

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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-lic-documentation/>

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

Kreißig, J. und J. Kuemmel (1999): Baustoff-Oekobilanzen. Wirkungsabschätzung 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 of conformance to EN10025:2004 at the time of LCA study – 0620-CPD-58521/04

Material Manufacturer Certificate - Certificate number of conformance to Pressure Equipment Directive 2014/68/EU at the time of LCA study – HPiVS/P1057-043-Q-02

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

EN 10025-3: 2005 - Technical delivery conditions for normalized/normalized rolled weldable fine grain 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 10025-5: 2005 - Technical delivery conditions for structural steels with improved atmospheric corrosion resistance

EN 10028-3: 2010 - Flat products made of steels for pressure purposes - Part 3: Weldable fine grain steels, normalized

EN 10120: 2017 - Steel sheet and strip for welded gas cylinders

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.

EN 10207: 2018 - Steels for simple pressure vessels - Technical delivery requirements for plates, strips and bars

EN 10217-1: 2005 - Welded steel tubes for pressure purposes - Technical delivery conditions - Part 1: Non-alloy steel tubes with specified room temperature properties

EN 10217-2: 2005 - Welded steel tubes for pressure purposes - Technical delivery conditions - Part 2: Electric welded non-alloy and alloy steel tubes with specified elevated temperature properties

EN 10217-3: 2005 - Welded steel tubes for pressure purposes - Technical delivery conditions - Part 3: Alloy fine grain steel tubes

EN 10338 - 2010 - Hot rolled and cold rolled non-coated products of multiphase steels for cold forming — Technical delivery conditions

SAE J 403 - 2009 - Surface Vehicle Standard-Chemical Compositions of SAE Carbon Steels

SAE J 404 - 2009 - Chemical Compositions of SAE Alloy Steels

SAE J 2340 - 1999 Surface Vehicle Recommended Practice- Categorization and Properties of Dent Resistant, High Strength, and Ultra High Strength Automotive Sheet Steel

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

ASTM A53 /A53M -18 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

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

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

ASTM A500 / A500M - 18 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

ASTM A516 / A516M - 17 Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate- and Lower-Temperature Service

ASTM A606 / A606M - 18 Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance

ASTM A709 / A709M - 18 Standard Specification for Structural Steel for Bridges

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

ASTM A500 / A500M - 18 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

ASTM A786 / 786M - 15 Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates

ABS-2: 2013 - American Bureau of Shipping-Rules for Materials and Welding

AS NZS 1594: 2011 Structural steel - Hot-rolled plates, floorplates and slabs

CSA G40.20 - G40.21: 2013 General requirements for rolled or welded structural quality steel / Structural quality steel

JIS G 3101: 2015 Rolled Steels for general structure

JIS G 3106: 2015 Rolled Steels for welded structure

JIS G 3125: 2015 Superior atmospheric corrosion resisting rolled steels

JIS G 3131: 2010 Hot-rolled mild steel plates, sheets and strips

JIS G 3132: 2018 Hot-rolled carbon steel strip for pipes and tubes

DIN 1614-1: 1986 Steel flat products - hot rolled sheet and strip – Technical delivery conditions – Mild unalloyed steels for cold reducing

DIN EN 10083-2: 2006 Steels For Quenching And Tempering - Part 2: Technical Delivery Conditions For Non Alloy Steels

DIN EN 10083-3: 2009-01 Steels For Quenching And Tempering - Part 3: Technical Delivery Conditions For Alloy Steels

DIN EN 10111:2008 Continuously hot rolled low carbon steel sheet and strip for cold forming

API 5L 45<sup>th</sup> Edition 2012 Specification for Line Pipe

API 5CT: 2011- Specification for Casing and Tubing

ISO 3183 3<sup>rd</sup> Edition 2012 Annex M Petroleum and natural gas Industries - Steel pipe for pipeline transportation systems