

ENVIRONMENTAL PRODUCT DECLARATION

MERCHANT BARS LME TRITH SAINT LEGER PLANT



Certification N°

S-P-02023



Based on PCR
PCR 2012:01, Version
products and
construction services (2019-12-20)

Issue date
2020/04/15
Revision

v.1

Valid until 2025/04/14

CPC Code

41



GENERAL INFORMATION

EPD REFERENCES

EPD OWNER: LAMINES MERCHANDS EUROPÈENS S.A.

AFV BELTRAME GROUP, 2, RUE EMILE ZOLA, BP 1, TRITH SAINT LEGER, FRANCE

PROGRAM OPERATOR: EPD INTERNATIONAL AB, VALHALLAVÄGEN 81, 114 27 STOCKHOLM, SWEDEN

INDEPENDENT VERIFICATION

This declaration has been developed referring to the International EPD System, following the General Programme Instructions; further information and the document itself are available at: www.environdec.com. EPD document valid within the following geographical area: Italy and other countries according to sales market conditions (North Africa and Europe).

CEN standard EN 15804:2012+A1:2013 served as the core PCR (PCR 2012:01 Construction products and Construction services, version 2.31, valid until 2020-09-01) PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Filippo Sessa. Contact via info@environdec.com

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Third party verifier: ICMQ SpA, via De Castillia, 10 20124 Milano (www.icmg.it)

Accredited by: Accredia

Environmental declarations published within the same product category, though originating from different programs, may not be comparable. In particular, EPDs of construction products may not be comparable if they do not comply with EN 15804:2012+A1:2013.

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EPD process certification [Internal] EPD verification (External)

Technical support to Beltrame Group was provided by Life Cycle Engineering, Italy. (info@lcengineering.eu, www.lcengineering.eu).









THE COMPANY

The AFV Beltrame Group has operated in the steel industry for over a century, producing rolled sections for use in construction, shipyards, and excavators.

The facilities, which have a production capacity of approximately **3,2 million tons**, include three electric furnaces and ten rolling mills. These are scattered in six plants located in **Italy**, **France**, **Switzerland**, and **Romania**.

Their geographical distribution is very advantageous given the areas where the products are consumed and those where raw materials are purchased.

The AFV Beltrame Group is commercially present in all European markets as well as in the Mediterranean region through shares in local companies, agents, or the internal sales force. All employees, amounting to approximately **2,000 people**, are strongly committed and motivated to satisfy the customers' needs through constant improvements in production, organization and level of service.

In order to support the principles in the code of ethics and the policy regarding **Quality**, **Health** and **Safety**, and the **Environment** (QHSE), all production plants have adopted an Integrated Management System.







SCOPE AND TYPE OF EPD®

THE APPROACH USED IN THIS EPD IS "CRADLE TO GATE WITH OPTIONS" ONE

TABLE OF MODULES

PR	ODUCT STA	GE	CONSTR PROCES	RUCTION S STAGE				USE STAGE					END OF L	IFE STAGE		BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De- construction demolition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
х	Х	Х	Х	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

TYPE OF EPD® : Product EPD®

REPORT LCA: Life Cycle Assessment (LCA) of hot rolled bars via EAF process.

REFERENCE PERIOD: 2018

GEOGRAPHICAL SCOPE OF THE EPD: World according to sales market conditions.

AVERAGING: Weighted on the plant production.

SOFTWARE: SimaPro ver. 9.0.0.47 (www.pre.nl)

MAIN DATABASE: Ecoinvent 2.2

Environmental declarations published within the same product category, though originating from different programs, may not be comparable.





DETAILED PRODUCT DESCRIPTION

This EPD refers to construction products hot rolled structural profiles and merchant bars produced at **LAMINÉS MARCHANDS EUROPÉENS S.A** plant in Thith Saint Léger (France), with electric arc furnace route, starting from post and pre consumer steel scraps, varying steel grades, e.g. S235, S275, S355, etc..

PRODUCT DIMENSIONS AND SPECIFIC STANDARDS:

- » EN 10025-1:2004
- » EN 10025-2:2004 » Attestation of conformity system 2+ (CE marking)

» EN 10025-5:2004,

CONTENT DECLARATION

The product here considered has the following composition:



PPODUCT	STANDARD	DIMENSIC	ONS (mm)	THICKNESS (mm)		
PRODUCT	STANDARD	from	to	from	to	
l sections	EN 10034:1993	80	160	5,2	7,4	
Tees	EN 10055:1995	20	100	3	11	
Angles	EN 10056-1:1998 EN 10056-2:1993	15	160	3	16	
Angles sharp edges DIN 1022:2004		20	100	3	11	
Flats EN 10058:2003		10	150	3	50	
Wide flats DIN 59200:2001		151	250	5	30	
Squares EN 10059:2003		-	-	10	50	
Rounds EN 10060:2003		_	_	6	30	
U channels	EN 10279:2000	30	160	4	7,5	





ENVIRONMENTAL PERFORMANCE: AFV BELTRAME FRENCH PLANT

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generation) is presented for the three phases Upstream, Core and Downstream and related sub-phases (A1-A2-A3-A4). Construction installation (A5), use phase (B1 - B7) and end of life (C1 - C4) are modules not declared (MND).

SCIENTIFIC NOTATION Reading guide:

GWP: 4.7E+02 is equal to $4.7 \times 10^{+2} = 4.7 \times 100 = 470$

ENVIRONMENTAL IMPACTS PER DECLARED UNIT

GWP Global warming potential

ODP Depletion potential of the stratospheric ozone layer

AP Acidification potential of land and water

EP Eutrophication potential

POCP Formation potential of tropospheric ozone photochemical oxidants

ADPE Abiotic depletion potential for non-fossil resources

ADPF Abiotic depletion potential for fossil resources

		UPSTREAM PROCESS	CORE PROCESS		DOWNSTREAM PROCESS	
POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	A1	A2	A3	A4	TOTAL*
GWP	kg CO ₂ eq	1.3E+02	9.3E+00	2.3E+02	5.8E+01	4.2E+02
ODP	kg CFC-11 eq	3.9E-05	1.4E-06	5.0E-06	8.7E-06	5.4E-05
AP	kg SO ₂ eq	6.0E-01	7.0E-02	3.9E-01	2.3E-01	1.3E+00
EP	kg PO4 ³⁻ eq	9.4E-02	1.1E-02	4.4E-02	4.7E-02	2.0E-01
РОСР	kg C ₂ H ₄ eq	6.3E-02	1.9E-03	4.8E-02	4.8E-03	1.2E-01
ADPE	kg Sb eq	6.6E-05	1.2E-08	6.9E-07	7.1E-08	6.6E-05
ADPF	MJ	4.2E+03	1.2E+02	6.7E+02	7.6E+02	5.8E+03

*Totals may not correspond to the sum of the individual contributes due to approximations.





ENVIRONMENTAL PERFORMANCE: AFV BELTRAME FRENCH PLANT

PERE Use of renewable primary energy excluding renewable primary energy resources 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 resources

SM Use of secondary raw materials

RSF Use of renewable secondary fuels

NRSF Use of non-renewable secondary fuels

FW Use of net fresh water

RESOURCE USE PER DECLARED UNIT

	UNITS / D.U.	UPSTREAM PROCESS	COREP	ROCESS	DOWNSTREAM PROCESS	
USE OF RESOURCES		A1	A2	A3	A4	TOTAL*
PERE	MJ	4.3E+02	1.9E-01	5.0E+01	1.2E+00	4.8E+02
PERM	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ	4.3E+02	1.9E-01	5.0E+01	1.2E+00	4.8E+02
PENRE	MJ	1.1E+04	1.2E+02	8.9E+02	7.6E+02	1.3E+04
PENRM	MJ	0.0E+00	0.0E+00	1.8E+01	0.0E+00	1.8E+01
PENRT	MJ	1.1E+04	1.2E+02	9.1E+02	7.6E+02	1.3E+04
SM	kg	1.2E+03	0.0E+00	0.0E+00	0.0E+00	1.2E+03
RSF	MJ	3.8E+02	0.0E+00	0.0E+00	0.0E+00	3.8E+02
NRSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m ³	5.3E+00	1.1E-02	1.8E+00	6.7E-02	7.1E+00

*Totals may not correspond to the sum of the individual contributes due to approximations.





ENVIRONMENTAL PERFORMANCE: AFV BELTRAME FRENCH PLANT

HWD Hazardous waste disposed NHWD Non-hazardous waste disposed RWD Radioactive waste disposed CRU Components for re-use MFR Materials for recycling

MER Materials for energy recovery

EEE Exported electrical energy

EET Exported thermal energy

OUTPUT FLOWS AND WASTE CATEGORIES PER DECLARED UNIT

		UPSTREAM PROCESS	CORE P	ROCESS	DOWNSTREAM PROCESS	
WASTE GENERATION AND TREATMENT	UNITS / D.U.	A1	A2	A3	A4	TOTAL*
		\		ĨĨ.		
HWD	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NHWD	kg	3.7E-02	0.0E+00	5.6E-01	0.0E+00	6.0E-01
RWD	kg	3.8E-04	0.0E+00	0.0E+00	0.0E+00	3.8E-04
CRU	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MFR	kg	0.0E+00	0.0E+00	2.1E+02	0.0E+00	2.1E+02
MER	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EEE	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EET	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

*Totals may not correspond to the sum of the individual contributes due to approximations.





CALCULATION RULES

METHODOLOGY

The environmental burden of the product has been calculated according to the GPI v. 2.5 (2019/09/18) issued by the International EPD System¹ (Cradle to gate with options).

This declaration is based on the application of Life Cycle Assessment (LCA) methodology to the whole life-cycle system. Merchant bars at plant level, was described by using specific data from manufacturing facility (Thith Saint Léger plant, in France) for year 2018.

Customized LCA² questionnaires were used to gather in-depth information about all aspects of the production system (for example, raw materials specifications, pre treatments, process efficiencies, air emissions, waste management), ultimately providing a complete picture of the environmental burden of the system from raw materials supply (A1) to Transport (A2) and Manufacturing (A3).

Life Cycle Inventory data for a minimum of 95% of total inflows (mass and energy) to the upstream and core module has been included. The use phase and end of life were not considered according to PCR, while transport to final destination was considered (A4).

¹International EPD System is managed by EPD International AB (www.environdec.com). ²The LCA methodology is standardized at international level by ISO 14040 and ISO 14044.

DECLARED UNIT

Bars are usually traded in mass so that the declared unit is **1 ton of hot rolled merchant bars.**

PRODUCTION

For LME facility, the 2018 production was **495 471** ton.







CALCULATION RULES



According to the PCR 2012:01 v. 2.31 the main activities are listed and divided in three subsystems: UPSTREAM Process, CORE Module, DOWNSTREAM Process



Figure 1. Scheme of the considered system boundaries (including upstream, core and downstream main processes).





UPSTREAM PROCESS



Scheme of the considered system boundaries (upstream processes).







CORE PROCESS







DOWNSTREAM PROCESS







ADDITIONAL INFORMATION

Main environmental characteristics of the considered plants are:

1. EAF primary and secondary dedusting achieve an efficient extraction of all emission sources by using direct off-gas extraction (shaft) and total building evacuation, with subsequent dedusting by means of a bag filter

2. Prevention and reduction of (PCDD/F) and (PCB) emissions by using the combination of the following techniques,

- appropriate rapid quenching of the EAF off-gas
- injection of adsorption agents into the duct
- final dedusting with a bag filter.

3. Minimisation of water consumption by using a recirculating loop cooling system with purge recovery. Removal of solids by sedimentation or filtration, removal of oil with skimming devices.

4. Prevention and reduction of waste generation by using the following techniques:

I. appropriate collection and storage to facilitate specific treatments;

II. on-site recovery and recycling of specific by-products from the different processes;

III. external recovery of filter dusts in the non-ferrous metal industry (zinc, lead); **IV.** separation of scale in the water treatment process and external recovery in the cement and blast-furnace industry;

V. recovery of EAF slag as a secondary raw material (inert aggregates) in the construction industry.

5. Radiation monitoring of scraps and raw materials by means of detection equipment installed at the weighing post.

In accordance with general EPD[®] requirements the LCA study used specific, generic and other generic data. This last data contributes to the environmental indicators less than 10%.



