Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

BILLETTE CREAL

from

INDINVEST LT Srl

Programme:	The International EPD® System, www.environdec.com
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General Information

Programme Information

EPD Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

CEN EN 15804 standard is used as Core Product Category Rules (PCR)
Product category rules (PCR): *PCR 2019:14 - VERSION 1.11 - CONSTRUCTION PRODUCTS* CPC Code: *415* "*Semi-finished products of copper, nickel, aluminium, lead, zinc and tin or their alloys*"
PCR Review Conducted by: *Claudia A. Pena* Organisation: *Technical Committee of the International EPD® System. The list of members can be found at www.environdec.com. The review panel can be contacted via email: info@environdec.com*
Independent third-party declaration and data auditing, under ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third-party auditing: *DNV Business Assurance Italy S.r.l.* Certified by: ACCREDIA Approved by: The International EPD® System
The procedure for data follow-up during the EPD validity involves the third-party auditor: ☒ Yes ☐ No

The EPD owner legally owns and is responsible for the declaration.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information on comparability, see EN 15804 and ISO 14025

Company information

EPD Owner: INDINVEST LT Srl

Contact person: Eng. Alessandro Acquas

Company description:
INDINVEST LT is a leading player in the production and extrusion of aluminium profiles. Its proven track-record stretches back more than 40 years. Its evolving experience and knowledge are underpinned by solid values, such as innovation, quality, service and reliability, which apply to every Research & Development process that goes into our products and systems for industry and architecture.
Based in Cisterna di Latina, about 60 km from Rome, Indinvest LT has an integrated billet foundry with a production capacity of 60,000 tonnes per year. Six extrusion lines with an annual production capacity of 60,000 tonnes can meet market requirements from a 280,000-square-meter site.
The company strengthened its presence in the foreign market. About half of INDINVEST LT's production is destined for the European market.
With its integrated foundry, which is crucial for customised alloys, INDINVEST LT guarantees continuous availability of raw material and the right balance in extrusion between the alloy and the mechanical and surface features of the profiles required by customers.
The advantages of being aluminium profile extruders and raw material producers can be seen in the continuous exchange of knowledge between the extrusion and foundry departments' technicians, who work together to improve the final product. The foundry uses the latest energy-saving technologies. Working alongside top research institutes, INDINVEST LT has made significant progress in recycling pre- and post-consumer aluminium scrap, succeeding in producing high-quality secondary aluminium alloys, particularly the CREAL® alloy which contains more than 85 per cent of recycled material.
The company has a 5" 1100-ton press specifically to produce microprofiles, two 7" 1800- and 2200-ton presses, two 8.5" 2500- and 2800-ton presses and a 10" 3500-ton press. With its systems it can extrude profiles with weights up to 22 kg/m, and lengths up to 14 metres and achieve mechanical features that meet the requirements of various sectors, including commercial and automotive industry profiles.

Product and management system certifications:
INDINVEST LT has been UNI EN ISO 9001:2018 certified since 1997; UNI EN ISO 14001:2015 since 2007; UNI EN ISO 50001:2018 since 2021.

Name and location of production site(s):
INDINVEST LT is headquartered and operational at its plant in Cisterna di Latina LT

Product information

Product name:
6060 CREAL® billet
6063 CREAL® billet

Product identification:
Billets composed of Aluminium alloys of the 6XXX series, with a high recycled content.

Product Description:
This EPD is about INDINVEST LT's **CREAL®** aluminium billet.
CREAL® is a billet with a recycled aluminium content of more than 85 per cent recovered from the waste circuit and upgraded to raw material using scrap selected by our suppliers with the market's most advanced sorting technology. The process to define the billet aluminium content is fully traceable and certified by an independent third-party organisation (REF. Validation C087 of 23/12/2021 - IGQ Istituto Italiano di Garanzia della Qualità (Italian Quality Assurance Institute).

UN CPC Code:
415 "Semi-finished products of copper, nickel, aluminium, lead, zinc and tin or their alloys"

Technical data
CREAL® is an aluminium alloy billet that meets UN EN 573, particularly the 6xxx family of alloys.

LCA information

Declared unit:
1 kg billet

Reference service life:
Not applicable

Time scales:
2020

Database and LCA software used:
SimaPro v. 9.3.0.3; Ecoinvent 3.8.

System boundaries:
Cradle to gate (A1-A3);
The billet falls within the Cradle to Gate A1-A3 EPD case study, as it meets the three requirements described in chapter 2.2.2 of PCR 2019:14

Additional company and product information:
www.indinvestlt.it

Company that conducted the LCA:
Demetra Soc. Coop. ONLUS (non-profit organisation)

Data quality
In this LCA study, primary data is used for the quantities of materials and energy used for all processes for which INDINVEST LT has control: raw materials, auxiliaries and packaging; energy (electrical and thermal) and water consumption. Specific data is used for: incoming transport of materials and internal consumption; transport of internally produced waste and disposal processes; air emissions; water discharges.
Ecoinvent 3.8. database entries are used to model processes such as the extraction and processing of raw materials to produce basic materials, for energy production and those processes where specific data could not be acquired. The supplier's energy was used to define electricity consumption.

Cut off
The transport process to customers (step A4) is excluded, as the sale of CREAL billets does not occur.

Allocation
An allocation on the unit of mass is made. Raw materials and their transport are specific for the alloy types. For data for which the quantity per alloy type is unknown, the allocation is made by dividing the totals by the total kg of billets produced.

Reported modules, geographical scope, data variation:

	Production			Manufacturing processes		Use phase							End of life				Resource recovery
	Raw material supply	Transport	Production	Transport	Building installation	Use	Maintenance	Repair	Replacement	Renovation	Operational energy consumption	Operational water consumption	Dismantling - demolition	Transport	Waste processes	Disposal	Potential Reuse-Recovery-Recycling-
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
BILLET reported modules	X	X	X	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Geographical boundaries	EU	EU	EU	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specific data used	>90%			-		-	-	-	-	-	-	-	-	-	-	-	-
Result variations	±12%			-		-	-	-	-	-	-	-	-	-	-	-	-

A1: Raw material supply

This phase considers the raw materials that are melted down and the energy consumption required for billet production. All PRE-consumer scrap was treated as waste and is free of environmental burdens.

A2: Transport

This phase considers the incoming transport of raw materials, packaging and auxiliaries to the production process and internal handling.

A3: Production

This phase considers the production of packaging materials and process auxiliaries, water consumption and the waste generated in terms of waste, emissions and discharges.

Content information

Product components	6060 CREAL BILLET	6063 CREAL BILLET
Aluminium ingots	0%	0%
POST consumer scrap	81.6%	85%
PRE consumer scrap	17.5%	12.7%
Other	0.9%	2.3%
Renewable material	0%	0%
Biogenic carbon	0%	0%
Packaging materials	**Weight - kg per 1 kg Billet**	
Wood	0.000001 kg	
Steel strap	0.000671 kg	
Biogenic carbon	0.0003 kg C	

No substances on the ECHA list - Substances of Very High Concern for Authorisation (https://echa.europa.eu/candidate-list-table) are used.

Environmental performance

The average impact of the two CREAL alloys is shown with the percentage of variation of the different indicators

			CREAL BILLETS	
IMPACT CATEGORY		**Unit**	**A1-A3**	Δ
Global warming Potential - Total	GWP-Total	kg CO2 eq	9.68E-01	± 12%
Global warming Potential - Fossil	GWP-Fossil	kg CO2 eq	9.65E-01	± 12%
Global warming Potential - Biogenic[1]	GWP-Biogenic	kg CO2 eq	2.16E-03	± 11%
Global warming Potential - Land use and LU change	GWP-Luluc	kg CO2 eq	8.50E-04	± 19%
Global warming Potential (GWP100a) - IPCC 2013[2]	GWP-GHG	kg CO2 eq	9.47E-01	± 12%
Ozone depletion Potential	ODP	kg CFC11 eq	9.55E-08	± 5%
Acidification Potential	AP	mol H+ eq	3.30E-03	± 17%
Eutrophication Potential, freshwater	EP - freshwater	kg P eq	2.17E-04	± 18%
Eutrophication Potential, freshwater[3]	EP - freshwater - PO_4	kg PO_4 eq	6.67E-04	± 18%
Eutrophication Potential, marine	EP - marine	kg N eq	8.82E-04	± 12%
Eutrophication Potential, terrestrial	EP - terrestrial	mol N eq	7.60E-03	± 15%
Photochemical ozone formation Potential	POCP	kg NMVOC eq	2.87E-03	± 15%
Resource use Potential, minerals and metals[4]	ADP- minerals&metals	kg Sb eq	1.41E-05	± 9%
Resource use Potential, fossil[4]	ADP-fossil	MJ	1.24E+01	± 10%
Water use Potential[4]	WDP	m3 depriv.	2.02E-01	± 8%
OTHER IMPACT INDICATORS				
Particulate matter emissions	PM	disease inc.	1.18E-07	± 37%
Ionising radiation, human health[5]	IRP	kBq U-235 eq	6.95E-02	± 8%
Ecotoxicity, freshwater[4]	ETP-fw	CTUe	1.60E+01	± 18%
Human toxicity, cancer effects[4]	HTP-c	CTUh	1.01E-09	± 34%
Human toxicity, non-cancer effects[4]	HTP-nc	CTUh	1.36E-08	± 15%
Land use related impacts / Soil qulity[4]	SQP	Pt	3.47E+00	± 10%
USE OF RESOURCES				
Non-renewable primary energy as energy carrier	PENRE	MJ	1.34E+01	± 10%
Non-renewable primary energy as material utilization	PENRM	MJ	0.00E+00	-
Total use of non-renewable primary energy resources	PENRT	MJ	1.34E+01	± 10%
Renewable primary energy as energy carrier	PERE	MJ	6.70E-01	± 14%
Renewable primary energy resource as material utilization[6]	PERM	MJ	1.18E-02	± 0%
Total use of renewable primary energy resources	PERT	MJ	6.82E-01	± 14%
Use of secondary materials	SM	kg	1.12E+00	± 2%
Use of renewable secondary fuels	RSF	MJ	0.00E+00	-

[1] Biogenic carbon (GWP-biogenic) stored and re-emitted was zero; biogenic methane emissions were taken into account.
[2] The indicator includes greenhouse gases in total GWP but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013
[3] Eutrophication indicator, freshwater expressed in molecules of PO_4 eq.: this is obtained by multiplying the molecules of P eq. by a factor of 3.07
[4] The results of this environmental impact indicator should be used with caution because uncertainties about these results are high or indicator experience is limited

[5] This impact category mainly concerns the possible impact of low-dose ionising radiation on human health from the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or disposal of radioactive waste in underground facilities. This indicator does not measure potential ionising radiation from soil, radon and some building materials
[6] Calorific value of wood (beech) used of 18.6 MJ/kg

Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	-
Net use of fresh water	FW	m3	6.40E-03	± 9%
WASTE PRODUCED[7]				
Hazardous waste disposed	HWD	kg	8.26E-03	± 4%
Non-hazardous waste disposed	NHWD	kg	2.46E-01	± 9%
Radioactive waste disposed	RWD	kg	3.21E-05	± 7%
OUTPUT STREAMS				
Components for re-use	CRU	kg	0.00E+00	-
Materials for recycling[8]	MFR	kg	8.48E-02	0%
Materials for energy recovery	MER	kg	0.00E+00	-
Exported energy per energy	EE	MJ	0.00E+00	-

RESULT VARIATIONS			**6060 CREAL BILLET**	**6063 CREAL BILLET**
Global warming Potential (GWP100a) - IPCC 2013[9]	GWP-GHG	kg CO2 eq	- 12%	+ 12%

[7] Flows are evaluated using EDIP 2003 methodology
[8] Recycling Materials
[9] The indicator includes greenhouse gases in total GWP but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013

References

1. ISO 14040:2006 "Principles and framework" for life cycle assessment and a description of an LCA analysis structure
2. ISO 14044:2006 "Requirements and guidelines" is the primary support for the practical application of a life cycle study
3. ISO 14040:2006/AMD 1:2020
4. ISO 14044:2006/AMD 1:2017
5. ISO 14044:2006/AMD 2:2020
6. UNI EN ISO 14025:2010, Environmental labels and declarations — Type III environmental declarations — Principles and procedures (ISO 14025:2006)
7. General Programme Instructions for the International EPD® System – Version 3.11
8. PCR 2019:14 - VERSION 1.11 - CONSTRUCTION PRODUCTS
9. EN 15804:2012 + a2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
10. Demetra Soc. Coop. ONLUS (non-profit organisation), Life Cycle Assessment study on billets and profiles produced by INDINVEST LT S.r.l, June 2022, Rev 02

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