Environmental Product Declaration

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

Pre-painted aluminium

from

METAL TRADE COMAX, a.s.

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

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 CONSTRUCTION PRODUCTS, version 1.2.3
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair of the PCR review is Claudia A. Peña. The review panel may be contacted via info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: LCA Studio s.r.o. prof. Ing. Vladimír Kočí, Ph.D.,MBA, Ing. et Ing. Tatiana Trecáková, PhD., Ing. Kamila Sirotná Šárecká 1962/5, 16000 Prague 6, Czech Republic www.lcastudio.cz
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Hüdai Kara, Metsims Sustainability Consulting, United Kingdom www.metsims.com Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

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 about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: METAL TRADE COMAX, a.s.
Contact: Blažena Žambochová, Head of IMS Department, Blazena.Zambochova@mtcomax.cz
Description of the organisation:
METAL TRADE COMAX, a.s. is one of the oldest representatives in continuous coil coating in Europe and the only producer of continuously coated sheet metal in the Czech Republic. The company also engages in metallurgical production and manufactures foundry alloys and master alloys of aluminium and copper.

In particular, the company is a producer of:

- Pre-painted steel and aluminium
- Alloys and master alloys of non-ferrous metals on the aluminium and copper basis in the form of ingots or liquid aluminium.
- Profiles made of zinc coated strips
- Aluminium, zinc coated and steel strips and sheets
- Metal roofing and roof accessories

Over 220 thousand tons of company products are sold per year, more than 55% is exported. Products of METAL TRADE COMAX, a.s. are exported to 28 markets all around the world.

Product-related or management system-related certifications:

The manufacturing process management and quality is meeting the international standards ISO 9001, ISO 14001, ISO 45001, IATF 16949 and ISO 50001 for all operations. Additionally, Steel profiles and reinforcements for windows are certified by certification body CSTB France and approved according to the technical annex to RAL-GZ 716 by GKFP.

The company is a member of ECCA, seated in Brussels, gathering major European producers of pre-painted sheet metal, Foundry association of Czech Republic and quality association for plastic window profile systems Gütegemeinschaft Kunststoff-Fensterprofilsysteme e.V.

Name and location of production site(s):
METAL TRADE COMAX, a.s. has 4 production plants and employs nearly 600 people.

Product information

Product name: Pre-painted aluminium

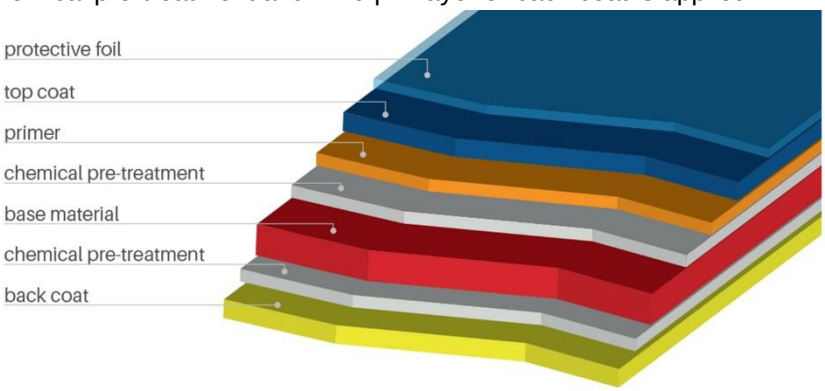
Product identification:
The pre-painted coils produced by METAL TRADE COMAX, a.s. are certified and comply with

- EN ISO 9001:2015
- EN ISO 14001:2015
- ISO 45001:2018
- EN ISO 50001:2018
- Factory production control certificate for pre-coated aluminium in compliance with regulation 305/2011/EU

The aluminium coil coating process in METAL TRADE COMAX, a.s. proceeds according to European standard EN 1396 aluminium and aluminium alloys – Coil coated sheet and strip for general applications

Product description:
The METAL TRADE COMAX' pre-painted aluminium is a product of continuous coil coating process. In the case of this EPD, it is referred to aluminium coils coated by polyester based paint. The pre-painted aluminium coil comes in various sizes and various finish colour shades.

Technical data:
Typically, the substrate material, in this case aluminium, is first treated with chemical pre-treatment, and coated with ~ 6 µ layer of primer and on top of that ~ 20 µm of top coat as the finishing colour. Protective foil is then applied for the purpose of transport and safe manipulation with the material. The underside is treated with chemical pre-treatment and ~ 10 µm layer of back coat is applied.



The substrate is aluminium and aluminium alloys of following parameters:

Substrate	Thickness (mm)	Width (mm)	Inner diameter of the coil (mm)	External diameter of the coil (mm)	Max weight of the coil (kg)
Al and alloys	0,4 – 2	600 – 1340	406/508/610	2000	8500

The top coat is a polyester based paint system. Polyesters are the most common coatings of pre-painted metal. At their most basic, polyesters can offer an economical product with reasonably good performance across the board. A polyester product typically has 20 – 27 µm thick coating with good flexibility and moderate durability when exposed as the top-weathering surface. Polyesters have moderate resistance to the effects of UV light (RUV 3 – RUV 4) and provide a basic barrier coat to help prevent the substrate from corrosion. Functional warranty of polyester paints is 10 years.
The quality, mechanical properties and corrosion resistance of the product are evaluated according to all parts of EN 13523. There are quality and mechanical tests assessed right after the coil coating process for each product, that is typically colour difference, gloss, film thickness and pencil hardness measurement, impact test, cupping test, T-bend test, etc.

Application:
Polyester or high durable (HD) polyester paint represents the most economical choice for such interior and building applications. The exact specification of each coating is tailored to the particular application. As an exterior or interior product, polyester paint coated aluminium are used for:

- Wall cladding, sandwich panels
- Roofing materials, plumbing components
- Roller shutters, louvres, windowsills
- Garage doors, soffits, containers
- Household appliances, etc.

UN CPC code: 41534 Plates, sheets and strip, of aluminium, of a thickness exceeding 0.2 mm

Geographical scope: Europe, Global

LCA information

Functional unit / declared unit: declared unit is 1 m^2 of pre-painted aluminium coil

Time representativeness: Site specific data from producer are based on 1 year average for process data (reference year 2021). Time scope less than 10-years were applied for background data. Time scope less than 2-years were applied for specific data

Database(s) and LCA software used: GaBi software, GaBi database and EcoInvent database

Description of system boundaries:
The system boundary is Cradle to gate with modules C1–C4 and module D according to EN 15804+A2. It covers the production of raw materials, all relevant transport down to factory gate, manufacturing by METAL TRADE COMAX, a. s., transport of deconstructed materials, waste processing and disposal of used product. The review framework comprises the following details:

- Raw materials acquisition and transport,
- Further processing of raw materials,
- Production operations,
- Energy and water consumption,
- Waste management,
- Packaging of the final product for delivery,
- Transport and waste processing,
- Waste incineration with energy recovery, production of recyclable materials.

System diagram:

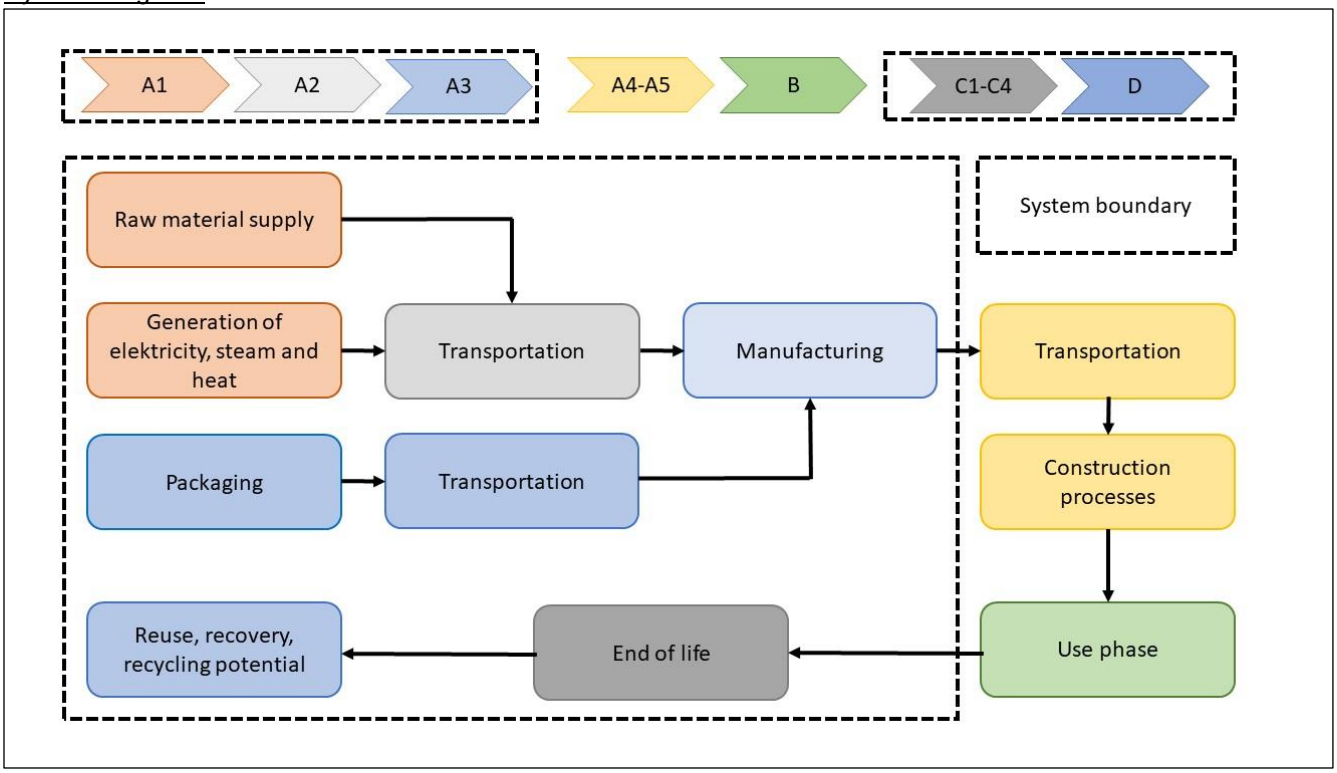


Figure 1 System boundary of the LCA study conducted on pre-painted aluminium

More information:

Cut off rules: The cut-off criterion was chosen based on the used PCR. According to the used PCR, more than 95 % of flows were included.

Allocations: All material and energy flows were used for production on the coating line, where 2 type of products are manufactured. Allocation was counted based on surface area of these 2 products.
No secondary fuels or materials are used in production. Generic process data for production of input materials and components were used.

Electricity consumption: Generation of electricity consumed within METAL TRADE COMAX, a. s. production was based on the Czech residual electricity grid mix.

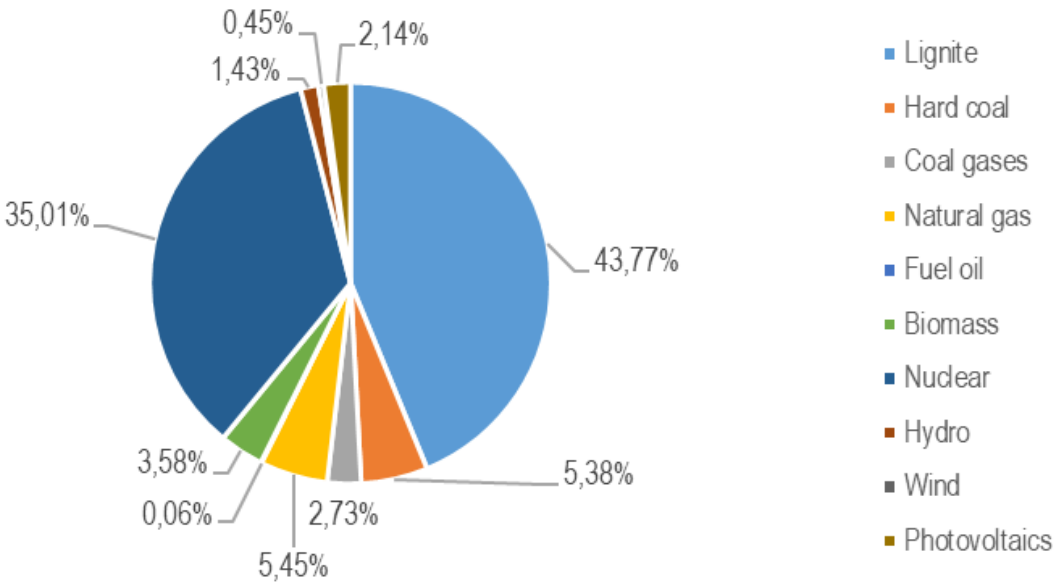


Figure 1 Residual grid mix from GaBi (Sphera, 2017)

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	GLO	GLO	CZ	NR	NR	NR	NR	NR	NR	NR	NR	NR	EU	EU	EU	EU	EU
Specific data used	>99%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	NR					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	NR					-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Aluminium base layer	1,889	5,95 %	0%
Chemical pretreatment	NA	NA	0%
Primer	0,013	0,00%	0%
Backcoat	0,009	0,00%	0%
Topcoat	0,038	0,00%	0%
TOTAL	1,949	5,77 %	0%

Packaging materials	Weight, kg	Weight-% of the product
Wooden parts	3,19E-02	1,64%
Metal parts	2,59E-03	0,13%
VCI paper	3,71E-04	0,02%
Plastic tapes and foils	4,91E-04	0,03%
Paper	1,24E-03	0,06%
TOTAL	3,66E-02	1,88%

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per 1m^2 of pre-painted aluminium coil
No substances from the SVHC list to report.			

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per 1m² of pre-painted aluminium coil							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	1,84E+01	0,00E+00	6,54E-03	1,16E-03	5,21E-03	-1,61E+01
GWP-biogenic	kg CO_2 eq.	-7,28E-02	0,00E+00	-9,01E-06	3,64E-03	3,95E-02	-1,02E-03
GWP-luluc	kg CO_2 eq.	6,20E-02	0,00E+00	3,64E-05	1,80E-08	4,88E-07	-1,79E-03
GWP-total	kg CO_2 eq.	1,83E+01	0,00E+00	6,57E-03	4,80E-03	4,47E-02	-1,61E+01
ODP	kg CFC 11 eq.	2,38E-07	0,00E+00	3,91E-16	7,40E-16	2,50E-13	-1,92E-11
AP	mol H^+ eq.	9,54E-02	0,00E+00	6,39E-06	2,50E-06	1,43E-05	-5,98E-02
EP-freshwater	kg P eq.	1,20E-03	0,00E+00	1,95E-08	1,79E-10	3,96E-08	-7,11E-06
EP-marine	kg N eq.	1,26E-02	0,00E+00	2,03E-06	1,11E-06	1,20E-05	-1,02E-02
EP-terrestrial	mol N eq.	1,39E-01	0,00E+00	2,43E-05	1,35E-05	6,93E-05	-1,11E-01
POCP	kg NMVOC eq.	4,13E-02	0,00E+00	5,59E-06	2,84E-06	2,35E-05	-3,04E-02
ADP-minerals&metals*	kg Sb eq.	3,92E-05	0,00E+00	5,45E-10	1,88E-11	1,27E-10	-1,09E-06
ADP-fossil*	MJ	2,31E+02	0,00E+00	8,72E-02	1,49E-03	1,77E-02	-2,12E+02
WDP	m^3	2,25E+00	0,00E+00	5,85E-05	5,25E-04	1,94E-03	-9,44E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption						

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.*

Potential environmental impact – additional mandatory and voluntary indicators

Results per 1m² of pre-painted aluminium coil							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG [1]	kg CO_2 eq.	1,84E+01	0,00E+00	6,58E-03	1,16E-03	5,21E-03	-1,61E+01
Particulate matter	Disease incidences	1,01E-06	0,00E+00	3,79E-11	8,37E-12	7,95E-11	-5,81E-07
Ionising radiation, human health	kBq U235 eq.	2,54E+00	0,00E+00	1,58E-05	4,67E-06	3,68E-05	-3,64E+00
Ecotoxicity, freshwater	CTUe	1,57E+02	0,00E+00	6,05E-02	5,59E-04	2,76E-02	-7,79E+01
Human toxicity, cancer	CTUh	1,64E-08	0,00E+00	1,22E-12	7,04E-14	7,95E-13	-6,51E-09
Human toxicity, non-cancer	CTUh	3,12E-07	0,00E+00	6,31E-11	5,62E-12	9,67E-11	-1,56E-07
Land Use	Pt	5,89E+01	0,00E+00	3,00E-02	3,88E-04	2,22E-03	-1,37E+01

[1] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Use of resources

Results per 1m² of pre-painted aluminium coil							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,27E+02	0,00E+00	4,95E-03	3,53E-04	2,21E-03	-7,27E+01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,08E+02	0,00E+00	4,95E-03	3,53E-04	2,21E-03	-7,27E+01
PENRE	MJ	2,61E+02	0,00E+00	8,74E-02	1,49E-03	1,77E-02	-2,12E+02
PENRM	MJ.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,31E+02	0,00E+00	8,74E-02	1,49E-03	1,77E-02	-2,12E+02
SM	kg	1,19E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,12E-01	0,00E+00	5,60E-06	1,24E-05	4,61E-05	-1,45E-01
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

Waste production and output flows

Waste production

Results per 1m² of pre-painted aluminium coil							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	2,76E-08	0,00E+00	4,18E-13	1,90E-13	2,58E-12	-9,50E-09
Non-hazardous waste disposed	kg	4,24E+00	0,00E+00	1,25E-05	5,28E-05	7,56E-03	-3,62E+00
Radioactive waste disposed	kg	1,20E-02	0,00E+00	1,08E-07	4,27E-08	2,95E-07	-1,67E-02

Output flows

Results per 1m² of pre-painted aluminium coil							
Indicator	**Unit**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	3,02E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,96E+00
Materials for energy recovery	kg	7,27E-03	0,00E+00	0,00E+00	0,00E+00	1,01E-02	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,07E-02	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,61E-02

Information on biogenic carbon content

Results per 1m² of pre-painted aluminium coil		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	NR
Biogenic carbon content in packaging	kg C	1,56E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Additional information

More information can be found on the website https://www.mtcomax.cz/

The declared unit is 1 m^2 of pre-painted aluminium coil, which equals 1,949 kg of product. For 1kg of product, the area equals 0,513 m^2.

References

General Programme Instructions of the International EPD® System. Version 4.0.
Product Category Rules (PCR) document for Construction Products (PCR 2019:14 Version 1.2.3, 2021-02-05)
ISO 14020:2000 Environmental labels and declarations — General principles, 2000-09
ISO 14025: EN ISO 14025:2006-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures
ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework, 2006-07
ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines, 2006-07
EN 15804+A2:2019 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products, 2019
Ecoinvent: Ecoinvent Centre, www.Eco-invent.org
Sphera: GaBi software version 10, 2022, Sphera solutions

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