

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 for:



Painted Aluminium Sheets from **ALBOND ALÜMİNYUM SANAYİ VE TİCARET A.Ş.**



ENVIRONMENTAL PRODUCT DECLARATIONS



Programme:

EPD Turkey, a fully aligned regional programme www.epdturkey.org

Programme operator:

EPD Turkey:
SÜRATAM – Turkish Centre for Sustainable
Production Research & Design Nef 09 B Blok
No:7/15 34415 Kağıthane/Istanbul, TURKEY

EPD registration
number:

S-P-01262

ECO Platform
registration number:

ECO-00000773

Publication date:

2018-11-08

Validity date:

2023-11-07

Geographical scope:

Global

The International EPD® System
www.environdec.com

EPD International AB



General information

Information about the organization

Owner of the EPD: ALBOND ALÜMİNYUM SANAYİ VE TİCARET ANONİM ŞİRKETİ

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Name and location of production site: Çorlu, Tekirdağ / Turkey

About the company

From its establishment in 2002 until 2004, Albond operated as an aluminium composite panels distributor. In May 2005, Albond commenced production of PE class composite panels with the instalment of its assembly line with an annual production capacity of 1,750,000 m². Thanks to its quality-based approach, Albond became a leading exporter company and grew rapidly.

Albond continues production successfully within its new factory build in 2010 which has a 30,000 m² enclosed area in Çorlu, Tekirdağ. With the addition of the new factory, Albond increased its production capacity to 7,500,000 m². With 4 composite panel assembly lines within its premises, Albond secured its position as a sector leader in producing A2, FR and PE fire class composite panels.

With the investment for its 4th assembly line, Albond became the first company in Turkey to operate 2-meter-wide production capacity. In addition, Albond introduced a state-of-the-art aluminium bobbin painting line with a capacity of 20,000 tonnes per year. In addition to establishing its slitting and cutting-to-length lines, with the cooperation of world's biggest paint producers, Albond established its paint mixing unit within its premises and completed its integrated production facility investments.

Albond has received 5 awards from Istanbul Exporters Association for its exports. Albond exports 45% of its yearly production, mainly to European countries such as Spain, England, Italy, France, Germany, Poland and Benelux which composes 70% of all exports. Albond is the biggest aluminium composite panels exporter in Turkey. Albond became the aluminium composite panels producer company with the most increase in exports and received the first-place prize in this category from Istanbul Materials and Minerals Association. From its very beginning until today, Albond kept progressing and year by year, it achieves better ranks among Turkey's biggest industrial enterprises list (ISO 500).

Product information

Product name: Painted Aluminium Sheet

Product identification: Albond HDPE, Albond PVDF, Albond PE painted aluminium sheets.

Product description: The products referred are aluminium sheets painted with high-durable polyethylene (HDPE), polymerizing vinylidenedifluoride (PVDF) and polyester (PE) paints. Aluminium sheets are mostly used as cladding material for building interior or exteriors. They can also be used within the advertising sector and for decoration.

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

Geographical scope: Turkey

LCA information

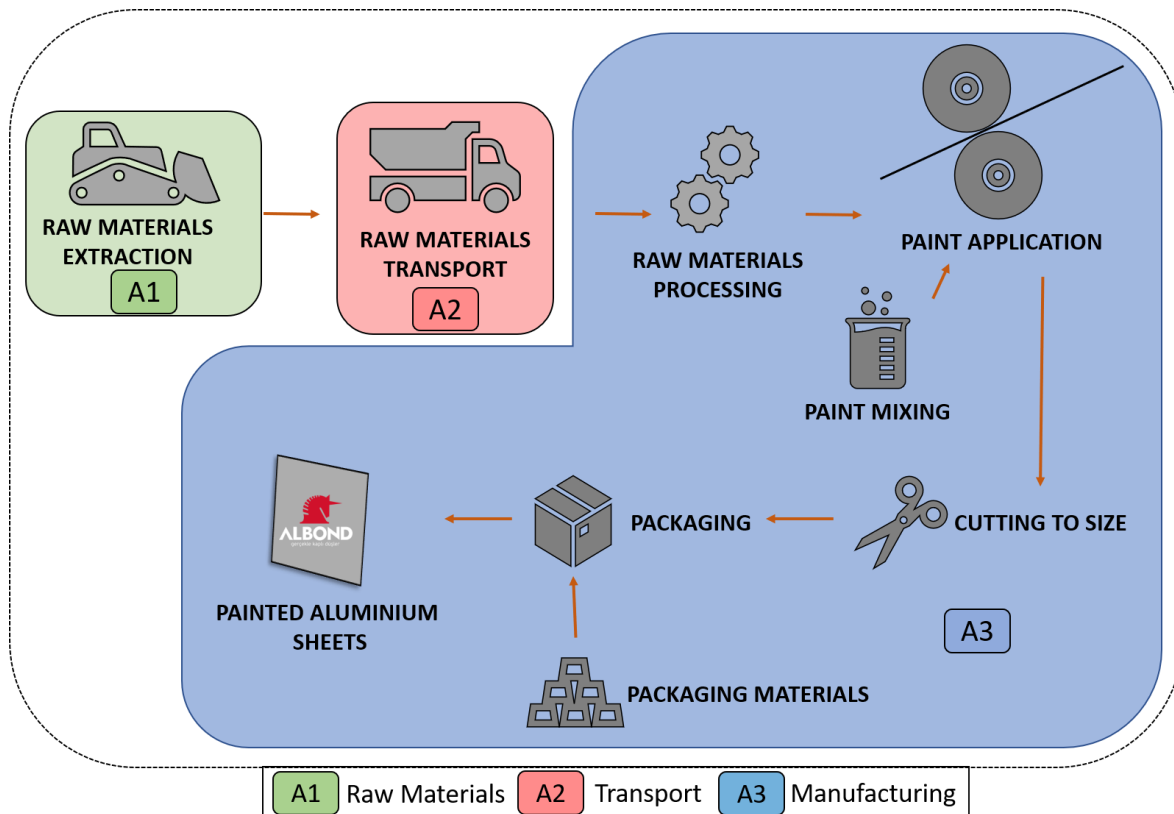
Functional unit / declared unit: 1 m²

Reference service life: 20 years

Time representativeness: 2017

Database(s) and LCA software used: TLCID (Turkish Lifecycle Inventory Database), Ecoinvent 3.4, Simapro

System diagram:



Description of system boundaries: This is a cradle to gate EPD. In this study, the system boundary involves raw materials (A1), transport (A2) and manufacturing (A3). Raw materials stage includes extraction and pre-treatment processes before production. Transport includes transport of raw materials needed for the production to the production facility in Çorlu. Manufacturing stage includes electricity, natural gas and diesel use during the production processes. It also includes packaging materials.

Excluded lifecycle stages: The life cycle stages A4, A5, B1-7 and C1-3 was excluded from the LCA study.

More information: Life cycle assessment calculations required for this EPD were done using Simapro, a life cycle assessment program. Energy calculations were obtained using Cumulative Energy Demand v 1.10, which is present in Simapro's latest version. Environmental Impacts were calculated using CML-IA baseline v4.2 and water scarcity potential was calculated using AWARE (Available Water Remaining) method. Global Warming Potential was calculated using IPCC GWP 100a method. Albond produces painted aluminium sheets and aluminium composite sheets. This EPD is relevant for Albond painted aluminium sheets with HDPE, PVDF and PE paint. No cut-off rule was applied within the LCA study underlying this EPD.

Technical Specifications for aluminium sheets:

Property	Unit	Specification	Standard
Aluminium Grades		EN AW 1XXX – 3XXX – 5XXX	EN 485-2 EN 573-3
Coating Types		PVDF, Polyester, HDPE	EN 1396
Primer Dry Film Thickness	µm	Std 4-5 Up to max.15	EN 13523-1
Topcoat Dry Film Thickness	µm	18 - 22	EN 13523-1
Clearcoat Dry Film Thickness	µm	10-15	EN 13523-1
Backing Coat Dry Film Thickness	µm	3-5	EN 13523-1
Bare Aluminium Thickness	mm	0,20 - 1,20	
Aluminum Strip Width	mm	600 – 1600	(narrower strips are available after slitting operation)
Dimensional Tolerances	mm	Acc.to EN 485-4 norm per thickness and width sizes	EN 485-4

Content declaration

Product

Materials	% range
Aluminium Sheet	95-99%
Coating	0-5%

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in Albond's painted aluminium sheets, either above the threshold for registration with the European Chemicals Agency or above 0.1 % (wt/wt).

Albond follows most relevant product standards for aluminium sheet products in buildings such as EN 15088, EN 485-2, EN 485-4, EN 507, EN 508-2, EN 573-3, EN 1396, EN 13501-1, EN 14783 and EN 13964/+A1.

Coil coating (foreground processes)

ALBOND COLOUR uses its own Coating Line which uses then an aluminium coil as a starting material. The production of the aluminium coil has been modelled using the average datasets published by the European Aluminium as described in the Environmental profile report /EAA EPR/. This proxy appears as reasonable considering the material supply to

ALBOND COLOUR which come mainly from European producers. Before applying the coil coating, the aluminium sheet is pre-treated through cleaning, etching and chemical conversion. The chemical conversion used by the Coating Line is based on Chromium-Free pre-treatment. The coating involves application of organic coating materials to the sheets with a typical thickness of 20 to 40 µm. The coil is in fact positioned at the beginning of the line, and then unwound at a constant speed, passing through the various pre-treatment and successive painting & backing processes before being recoiled. Two strip accumulators found at the beginning and the end of the line enable the work to be continuous.

Packaging

Distribution packaging: Pallet, cardboard bracing, corrugated board, cardboard bobbin, cardboard cover for bobbins, polyester packaging strap, packaging film

The material is supplied as rolled strips or stacked sheets in the dimensions specified by the customer. Wooden pallets and recycled plastic or recycled paper are used as packaging materials. After use, packaging materials can be re-used or recycled. Wooden pallets, plastic and paper can be collected separately and directed to the recycling circuit.

Further processing, use and reference service life

Coil coated sheet are intermediate products which are used for the production of various aluminium products used in the building sector. This EPD does not cover the downstream processes to convert this intermediate product into a final building products.

During the chemical conversion process, the Chromium-Free pre-treatment ions reacts entirely with the aluminium substrates to generate a stable chromium oxide layer. Hence, even in case of damage of the organic coating, there is no measurable release of chromium during the use phase.

Since the use phase is not modelled, no specific information can be given about the reference Service Life. Main uses are cladding and roofing of buildings. In practice, a service life of 50 years can be assumed in normal use for such application.

Durability

In normal use, aluminium building products are not altered or corroded over time. A regular cleaning (e.g. once a year) of the product suffice to secure a long service life. However, the use of cleaning solution too alkaline (pH>10) or too acid (pH >4) should be avoided.

In case of fire, aluminium is a non-combustible construction material Aluminium (European Fire Class A1) in accordance to EN 13501 as well as Directive 96/603/EC, and do not therefore make any contribution to fire.



Environmental performance for HDPE painted sheets

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	
POTENTIAL ENVIRONMENTAL IMPACT						
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	22.7E+0	94.8E-3	1.2E+0	24.0E+0
	Biogenic	kg CO ₂ eq.	246.3E-3	801.0E-6	33.4E-3	280.5E-3
	Land use and land transformation	kg CO ₂ eq.	59.0E-3	26.1E-6	364.3E-6	59.4E-3
	TOTAL	kg CO ₂ eq.	23.0E+0	95.6E-3	1.2E+0	24.4E+0
Acidification potential (AP)	kg SO ₂ eq.	135.4E-3	343.5E-6	4.6E-3	140.4E-3	
Ozone Depletion Potential (ODP)	kg CFC 11 eq.	964.5E-9	18.0E-9	63.1E-9	1.0E-6	
Eutrophication potential (EP)	kg PO ₄ ³⁻ eq.	31.5E-3	76.6E-6	2.0E-3	33.6E-3	
Formation potential of tropospheric ozone (POCP)	kg C ₂ H ₄ eq.	3.6E-3	-16.9E-6	62.6E-6	3.6E-3	
Abiotic depletion potential – Elements	kg Sb eq.	157.2E-6	150.7E-9	12.1E-6	169.5E-6	
Abiotic depletion potential – Fossil resources	MJ, net calorific value	191.8E+0	1.5E+0	17.4E+0	210.6E+0	
Water scarcity potential	m ³ eq.	3.8E+0	10.6E-3	459.7E-3	4.3E+0	
USE OF RESOURCES						
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	23.3E+0	21.8E-3	4.8E+0	28.1E+0
	Used as raw materials	MJ, net calorific value	000.0E+0	000.0E+0	1.3E+0	1.3E+0

	TOTAL	MJ, net calorific value	23.3E+0	21.8E-3	6.1E+0	29.4E+0
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	208.0E+0	1.6E+0	17.7E+0	227.3E+0
	Used as raw materials	MJ, net calorific value	4.0E+0	000.0E+0	3.1E+0	7.2E+0
	TOTAL	MJ, net calorific value	212.1E+0	1.6E+0	20.8E+0	234.4E+0
Secondary material		kg	000.0E+0	000.0E+0	000.0E+0	000.0E+0
Renewable secondary fuels		MJ, net calorific value	000.0E+0	000.0E+0	000.0E+0	000.0E+0
Non-renewable secondary fuels		MJ, net calorific value	000.0E+0	000.0E+0	000.0E+0	000.0E+0
Net use of fresh water		m ³	97.1E-3	321.8E-6	4.4E-3	101.8E-3
WASTE PRODUCTION FLOWS						
Hazardous waste disposed		kg	-	-	17.1E-3	17.1E-3
Non-hazardous waste disposed		kg	-	-	271.6E-3	271.6E-3
Radioactive waste disposed		kg	-	-	-	-
OUTPUT FLOWS						
Components for reuse		kg	-	-	000.0E+0	000.0E+0
Material for recycling		kg	-	-	241.1E-3	241.1E-3
Materials for energy recovery		kg	-	-	000.0E+0	000.0E+0
Exported energy, electricity		MJ	-	-	000.0E+0	000.0E+0

Exported energy, thermal	MJ	-	-	000.0E+0	000.0E+0
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Environmental performance for PVDF painted sheets

PARAMETER	UNIT	A1	A2	A3	TOTAL A1-A3	
POTENTIAL ENVIRONMENTAL IMPACT						
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	22.9E+0	95.9E-3	1.2E+0	24.2E+0
	Biogenic	kg CO ₂ eq.	258.4E-3	810.6E-6	33.4E-3	292.6E-3
	Land use and land transformation	kg CO ₂ eq.	60.8E-3	26.5E-6	364.3E-6	61.2E-3
	TOTAL	kg CO ₂ eq.	23.3E+0	96.7E-3	1.2E+0	24.6E+0
Acidification potential (AP)	kg SO ₂ eq.	137.3E-3	347.1E-6	4.6E-3	142.2E-3	
Ozone Depletion Potential (ODP)	kg CFC 11 eq.	973.4E-9	18.2E-9	63.1E-9	1.1E-6	
Eutrophication potential (EP)	kg PO ₄ ³⁻ eq.	31.9E-3	77.5E-6	2.0E-3	34.0E-3	
Formation potential of tropospheric ozone (POCP)	kg C ₂ H ₄ eq.	3.8E-3	-17.0E-6	62.6E-6	3.9E-3	
Abiotic depletion potential – Elements	kg Sb eq.	158.0E-6	152.5E-9	12.1E-6	170.3E-6	
Abiotic depletion potential – Fossil resources	MJ, net calorific value	194.4E+0	1.5E+0	17.4E+0	213.2E+0	
Water scarcity potential	m ³ eq.	4.0E+0	10.7E-3	459.7E-3	4.5E+0	
USE OF RESOURCES						

Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	23.6E+0	22.1E-3	4.8E+0	28.4E+0
	Used as raw materials	MJ, net calorific value	000.0E+0	000.0E+0	1.3E+0	1.3E+0
	TOTAL	MJ, net calorific value	23.6E+0	22.1E-3	6.1E+0	29.7E+0
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	214.6E+0	1.6E+0	17.7E+0	233.8E+0
	Used as raw materials	MJ, net calorific value	867.4E-3	000.0E+0	3.1E+0	4.0E+0
	TOTAL	MJ, net calorific value	215.4E+0	1.6E+0	20.8E+0	237.8E+0
Secondary material		kg	000.0E+0	000.0E+0	000.0E+0	000.0E+0
Renewable secondary fuels		MJ, net calorific value	000.0E+0	000.0E+0	000.0E+0	000.0E+0
Non-renewable secondary fuels		MJ, net calorific value	000.0E+0	000.0E+0	000.0E+0	000.0E+0
Net use of fresh water		m ³	99.7E-3	325.6E-6	4.4E-3	104.4E-3
WASTE PRODUCTION FLOWS						
Hazardous waste disposed		kg	-	-	17.1E-3	17.1E-3
Non-hazardous waste disposed		kg	-	-	271.6E-3	271.6E-3
Radioactive waste disposed		kg	-	-	-	-
OUTPUT FLOWS						
Components for reuse		kg	-	-	000.0E+0	000.0E+0
Material for recycling		kg	-	-	241.1E-3	439.8E-3

Materials for energy recovery	kg	-	-	000.0E+0	000.0E+0
Exported energy, electricity	MJ	-	-	000.0E+0	000.0E+0
Exported energy, thermal	MJ	-	-	000.0E+0	000.0E+0

Environmental performance for PE painted sheets

PARAMETER		UNIT	A1	A2	A3	TOTAL A1-A3
POTENTIAL ENVIRONMENTAL IMPACT						
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	22.7E+0	94.8E-3	1.2E+0	24.0E+0
	Biogenic	kg CO ₂ eq.	245.1E-3	801.0E-6	33.4E-3	279.3E-3
	Land use and land transformation	kg CO ₂ eq.	59.0E-3	26.1E-6	364.3E-6	59.4E-3
	TOTAL	kg CO ₂ eq.	23.0E+0	95.6E-3	1.2E+0	24.3E+0
Acidification potential (AP)		kg SO ₂ eq.	135.2E-3	343.5E-6	4.6E-3	140.2E-3
Ozone Depletion Potential (ODP)		kg CFC 11 eq.	959.3E-9	18.0E-9	63.1E-9	1.0E-6
Eutrophication potential (EP)		kg PO ₄ ³⁻ eq.	31.5E-3	76.6E-6	2.0E-3	33.5E-3
Formation potential of tropospheric ozone (POCP)		kg C ₂ H ₄ eq.	3.6E-3	-16.9E-6	62.6E-6	3.6E-3
Abiotic depletion potential – Elements		kg Sb eq.	157.1E-6	150.7E-9	12.1E-6	169.3E-6
Abiotic depletion potential – Fossil resources		MJ, net calorific value	191.1E+0	1.5E+0	17.4E+0	209.9E+0
Water scarcity potential		m ³ eq.	3.7E+0	10.6E-3	459.7E-3	4.2E+0

USE OF RESOURCES

Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	23.2E+0	21.8E-3	3.7E+0	27.0E+0
	Used as raw materials	MJ, net calorific value	000.0E+0	000.0E+0	2.4E+0	2.4E+0
	TOTAL	MJ, net calorific value	23.2E+0	21.8E-3	6.1E+0	29.3E+0
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	208.0E+0	1.6E+0	17.7E+0	227.3E+0
	Used as raw materials	MJ, net calorific value	3.2E+0	000.0E+0	3.1E+0	6.3E+0
	TOTAL	MJ, net calorific value	211.2E+0	1.6E+0	20.8E+0	233.6E+0
Secondary material		kg	000.0E+0	000.0E+0	000.0E+0	000.0E+0
Renewable secondary fuels		MJ, net calorific value	000.0E+0	000.0E+0	000.0E+0	000.0E+0
Non-renewable secondary fuels		MJ, net calorific value	000.0E+0	000.0E+0	000.0E+0	000.0E+0
Net use of fresh water		m ³	96.8E-3	321.8E-6	4.4E-3	101.5E-3

WASTE PRODUCTION FLOWS

Hazardous waste disposed	kg	-	-	17.1E-3	17.1E-3
Non-hazardous waste disposed	kg	-	-	271.6E-3	271.6E-3
Radioactive waste disposed	kg	-	-	-	-

OUTPUT FLOWS

Components for reuse	kg	-	-	000.0E+0	000.0E+0
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Material for recycling	kg	-	-	241.1E-3	241.1E-3
Materials for energy recovery	kg	-	-	000.0E+0	000.0E+0
Exported energy, electricity	MJ	-	-	000.0E+0	000.0E+0
Exported energy, thermal	MJ	-	-	000.0E+0	000.0E+0

Programme-related information and verification

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.

Programme:	EPD Turkey, a fully aligned regional programme EPD Turkey, www.epdturkey.org EPD Turkey: SÜRATAM – Turkish Centre for Sustainable Production Research & Design Nef 09 B Blok No:7/15, 34415 Kağıthane / İstanbul, Turkey www.suratam.org	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
EPD registration number:	S-P-01262	
Published:	2018-11-08	
Valid until:	2023-11-07	
Product Category Rules:	PCR 2012:01. Construction Products and Services. 2.2	
Product group classification:	UN CPC 41534	
Reference year for data:	2017	
Geographical scope:	Global	

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): <i>PCR 2012:01. Construction Products and Construction Services. 2.2,</i>
PCR review was conducted by: Martin Erlandsson, IVL Swedish Environmental Research Institute
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: <i><name, organisation and signature of the third party verifier></i>
<i>In case of accredited certification bodies:</i> Accredited by: <i><name of the accreditation body and accreditation number, where applicable></i> .
<i>In case of recognised individual verifiers:</i> Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

References

General Programme Instructions of the International EPD® System. Version 3.0.

/EN 13501-1/ Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests

/EN 15088/ Aluminium and aluminium alloys. Structural products for construction works. Technical conditions for inspection and delivery

/EN 485-2/ Aluminium and aluminium alloys - Sheet, strip and plate - Part 2: Mechanical properties

/EN 485-4/ Aluminium and aluminium alloys. Sheet, strip and plate. Tolerances on shape and dimensions for cold-rolled products

/EN 507/ Roofing products from metal sheet. Specification for fully supported roofing products of aluminium sheet

/EN 508-2/ Roofing products from metal sheet. Specification for self-supporting products of steel, aluminium or stainless-steel sheet. Aluminium

/EN 573-3/ Aluminium and aluminium alloys. Chemical composition and form of wrought products. Chemical composition and form of products

/EN 1396/ Aluminium and aluminium alloys. Coil coated sheet and strip for general applications. Specifications,

/EN 14783/ Fully supported metal sheet and strip for roofing, external cladding and internal lining - Product specification and requirements

/EN 13964/ Suspended ceilings. Requirements and test methods

/ISO 8301/ Thermal insulation – Determination of steady – State thermal resistance and related properties – Heat flow meter apparatus.

/EN 15804/ EN 15804:2012+A1:2013, Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

/ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

/ISO 14040 and ISO 14044/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO 14040:2006) and Requirements and guidelines (ISO 14044:2006)

/Construction Products and Construction Services PCR 2012:01 v.2.2/ Prepared by IVL Swedish Environmental Research Institute, Swedish Environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2012:01






/The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD@s as well as keeping a library of EPD@s and PCRs in accordance with ISO 14025.www.environdec.com

/Ecoinvent / Ecoinvent Centre, www.Eco-invent.org

/TLCID/ Turkish Life Cycle Inventory Database, Turkish Centre for Sustainable Production Research and Design (SÜRATAM), www.suratam.org

/SimaPro/ SimaPro LCA Package, Pré Consultants, the Netherlands, www.pre-sustainability.com

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Programme:	<p>EPD registered through fully aligned regional programme: EPD Turkey: www.epdturkey.org</p>  <p>ENVIRONMENTAL PRODUCT DECLARATIONS</p>	<p>The International EPD® System www.environdec.com</p> 
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