ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025:2006 and EN 15804:2012+A2:2019 for

Copolymer Coated Aluminum Tape

Programme:
The International EPD® System

Programme Operator:
EPD International AB

Local Operator:
EPD Turkey

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CableMar®

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ECO PLATFORM EPD VERIFIED

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.

Programme Information

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)

Product Category Rules (PCR):

2019:14 Version 1.11, 2021-02-05, Construction
Products and CPC 54 Construction Services, EN 15804:2012 + A2:2019 Sustainability of Construction Works

PCR review was conducted by:
The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

EPD process certification EPD verification ☑

Third party verifier: Prof. Ing. Vladimír Kočí, Ph.D., MBA LCA Studio Šárecká 5,16000 Prague 6- Czech Republic

Approved by: The International EPD® System Technical Committee, supported by the Secretariat

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes No ☑

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About the Company

Kablomar Kablo Hammaddeleri San. ve Tic. Ltd. Sti.

CableMar was firstly established in 2004 in Sharjah-UAE to serve Cable Industry as the dealer and stockist of different types of raw materials. In 2006 the company completed its organization in Turkey. Since then, CableMar has been constantly evolving and becoming nowadays a solid company in the field of coating/lamination and converting Metallic/Non-Metallic Tapes (e.g., Aluminum, Steel, and Copper) with different types of plastics and chemicals for the Cable Industry. In December 2021, the new modern plant which has been designed and built up with the latest technology has commenced mass production. At the same time, the setup process of our new cold rolling aluminum machine is started.

The company is constantly developing from both a technological and an organizational point of view. CableMar works according to a completely integrated and traceable production process, from the raw material to the finished products according to ISO 9001: 2015, ISO 14001: 2015, and ISO 45001: 2018. This quality and efficiency philosophy guarantees Customer satisfaction and respect for the environment.

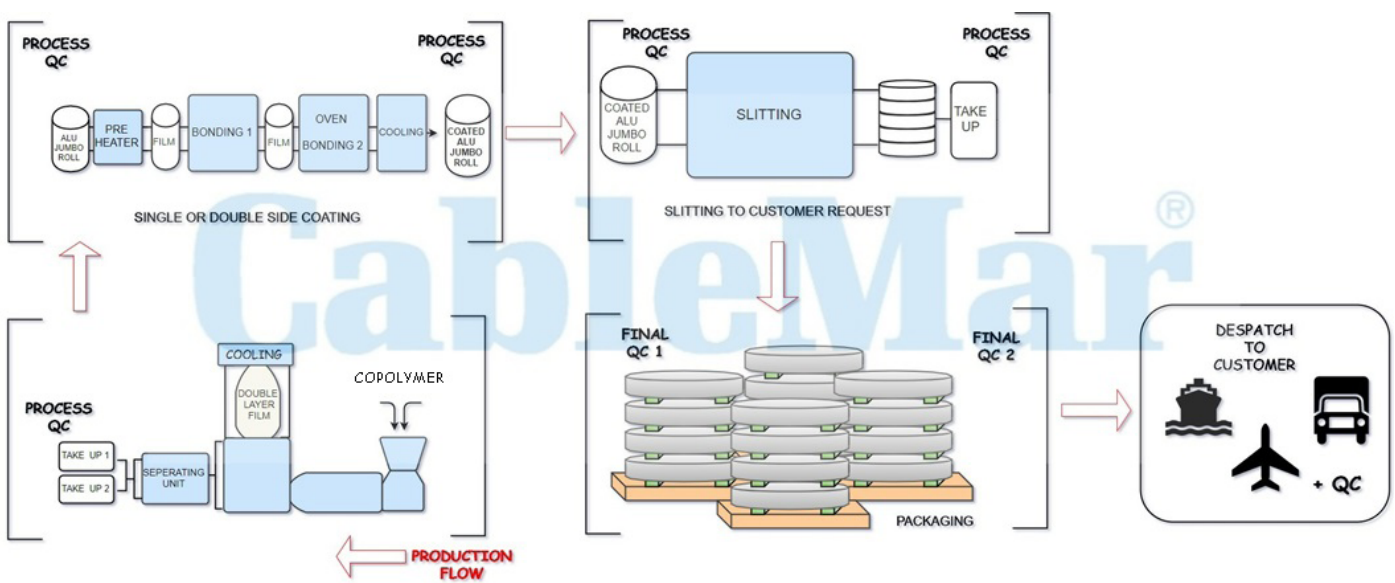
About the Product

Kablomar carries out the production of copolymer coated aluminum tape in three processes.

First, the mono-extrusion film production machine is filled with a raw materials mixture of EAA and other chemical supportive additivess in certain proportions. The mixture is melted at approximately 150-160 degrees and the copolymer film became suitable for the desired coating color, width, thickness, and quantity. The copolymer film and the bare aluminum foil are loaded into the coating machine in a single/double-side in accordance with the customer's request. Before the oven, the loaded materials are bound to each other by the pre-lamination process in the coating machine, and they are passed through a five-meter-long tunnel oven at certain speeds with a temperature of approximately 200-300 degrees. The bare aluminum foil and the copolymer film pass through the coating line and becomes completely adhered to each other with the help of temperature (HEAT). In this way, the copolymer-coated aluminum product, which is the main product, becomes ready for slitting.

In the third process, the full-automatic double shafts slitting machine is fixed according to the desired ID (inner diameter), width, and length then finally the production of copolymer-coated aluminum tape is completed by slitting the master roll into tapes. Finally, the tapes are packed in accordance with the customer’s specification and became ready for shipment. The aluminium used in the product comes mostly from Asia and Russia.

The production flow of copolymer coated aluminum tape is schematized below.



Specifications			
Property	**Unit**	**Typical Value**	**Test Method**
Appearance		The surface is straight, free from burrs, moisture, dust, pinholes, creases, cuts, tear or adhesion	
Color		Natural	
Length	meter	1050, 2100, 4200	
Core ID	mm	76, 102, 120, 150, 406	
Aluminium Thickness	micron	80-500	
Copolymer Thickness	micron	50 ± 10	
Tensile Strength	Mpa	≥ 75	ASTM B736
Peal Strength	N/cm	≥ 6.10	ASTM B736
Heat Seal Strength	N/cm	≥ 17.5	ASTM B736
Filler/Flooding Resistance at 68 ± 1 °C, 168 hours	N/cm	No delamination	REA PE-39, PE-89
Peal Strength of Water Resistance at 68 ± 1 °C, 168 hours		≥ 6.10	ASTM B736
Dielectric Strength (both side, DC 2 kV, 1 min)		Without breakdown	
Corossion Resistance	Grade	Min 7.	

Included Product Types and Thicknesses

The thickness of aluminium and copolymer used in the product varies according to customer demand. The company's thickness range for aluminium is between 80- 500 micron and 50 ± 10 micron for the copolymer. Furthermore, the final product can be one/ two sided coated. The included product types and thicknesses are described below.

Product Type	Aluminium Thickness (micron)	Total copolymer Thickness (micron)
80/45	80	45
100/50	100	50
45/184/45	184	90
150/50	150	50
50/150/50	150	100
50/200/50	200	100
200/50	200	50
300/50	300	50
350/50	350	50
300/60	300	60

Product Composition

- Aluminium: 82- 92 %
- Ethylene acrylic acid: 8- 18 %

Packaging

Slit rolls are wound uniform and tightly on cardboard or steel cores. Rolls are seperated with plastic, carton or wooden separators. The stacked rools are packed on wooden pallets with moisture prood materials.

REACH Regulation

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

LCA Information

Declared Unit	1 kg Copolymer Coated Aluminum Tape
Time Representativeness	2021
Database(s) and LCA Software Used	Ecoinvent 3.8 and SimaPro 9.3
System Boundaries	Cradle to gate with options, modules C1-C4, module D and with optional modules (A1–A3 + A4 + C + D)

The inventory for the LCA study is based on the 2021 production figures for Kablomar's copolymer coated aluminum tape produced at their factory located in Kocaeli.

This EPD's system boundary is cradle to gate with options, modules C1-C4, module D and with optional modules (A1–A3 + A4 + C + D).

The end of-life stage (Modules C1-C4) and resource recovery stage (Module D) are modelled on the assumptions that 90 % of the aluminium is recycled and the rest is landfilled.

The system boundaries in tabular form for all modules are shown in the table below.

	Product Stage			**Construction Process Stage**		**Use Stage**							**End of Life Stage**				**Benefits and Loads**
	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction. demolition	Transport	Waste Processing	Disposal	Future reuse. recycling or energy recovery potentials
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	TR	GLO	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific Data Used	>90%	>90%	>90%	>90%	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation-products	≤10%					-	-	-	-	-	-	-	-	-	-	-	-
Variation-Sites	NR					-	-	-	-	-	-	-	-	-	-	-	-

X = Included in LCA, ND = Not Declared

System Boundaries and Description

A1 - Raw Material Supply

Raw material supply stage includes raw material extraction and pre-treatment processes before its use in manufacturing. The main raw materials used in the declared product are aluminium, ethylene acrylic acid and, low-density polyethylene.

A2 - Raw Material Transport

Transport information of the raw materials are provided by the manufacturer. The distances and routes are calculated accordingly.

A3 - Manufacturing

Manufacturing processes consist of three main steps. The first step involves the production of copolymer via the mono-extrusion film production machine. In the second step, the copolymer film and the aluminium foil are loaded into the coating machine and becomes completely adhered to each other. Then, automatic double shafts cut the product in desired diameter, width and length.

A4 - Final Product Transport

The transport distances and routes of the final product are provided by the manufacturer. The distances and routes are calculated accordingly.

C1 - Deconstruction

The product is mainly used in high-voltage transmission lines and assumed that it dismantled by hand/small equipments, thus, the effect of C1 stage is assumed to be zero.

C2 - Waste Transport

This step includes the transport of materials after their use phase. The average distance was assumed as 100 km from demolition site to a waste area.

C3 - Waste Processing

Waste materials can be reclyced directly or disposed of by considering the different scenarios. It is assumed that no process is needed for this stage.

C4 - Disposal

It is assumed that 90 % of the aluminium used in the product is recycled whereas the rest is landfilled.

D - Benefits

According to International Aluminium Institute's (IAI) global aluminium recycling data, the global recycling efficiency rate of aluminium is 76% (2020). Thus, 76% of the aluminium that is recycled is assumed as benefit.

LCA Results

Impact Category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
GWP- Fossil	kg CO_2 eq	24.7	0.292	0.169	25.2	0.454	0	0.016	0	0.004	-16.3
GWP- Biogenic	kg CO_2 eq	-0.055	11.9E-6	0.002	-0.053	42.4E-6	0	14.1E-6	0	0.007	0.044
GWP- Luluc	kg CO_2 eq	0.064	182E-6	0.001	0.065	277E-6	0	6.5E-6	0	4.12E-6	-0.043
GWP- Total	kg CO_2 eq	24.7	0.292	0.172	25.2	0.454	0	0.016	0	0.012	-16.3
ODP	kg CFC-11 eq	587E-9	59.3E-9	4.0E-9	650E-9	93.1E-9	0	3.77E-9	0	417E-12	-382E-9
AP	mol H+ eq	0.155	0.008	0.001	0.164	0.012	0	46.3E-6	0	24.8E-6	-0.106
*EP- Freshwater	kg P eq	0.014	10.2E-6	175E-6	0.014	16.7E-6	0	1.1E-6	0	1.17E-6	-0.009
EP- Freshwater	kg (PO_4) eq	0.042	30.5E-6	0.001	0.043	50.1E-6	0	3.20E-6	0	3.50E-6	-0.028
EP- Marine	kg N eq	0.026	0.002	187E-6	0.028	0.003	0	9.40E-6	0	22.5E-6	-0.017
EP- Terrestrial	mol N eq	0.266	0.023	0.002	0.291	0.034	0	102E-6	0	66.4E-6	-0.177
POCP	kg NMVOC	0.076	0.006	465E-6	0.082	0.009	0	39.4E-6	0	21.6E-6	-0.050
ADPE	kg Sb eq	21.1E-6	448E-9	232E-9	21.8E-6	755E-9	0	57.7E-9	0	8.38E-9	-12.5E-6
ADPF	MJ	260	3.82	1.82	266	6.01	0	0.247	0	0.053	-169
WDP	m^3 depriv.	3.15	0.007	0.062	3.22	0.011	0	0.001	0	0.001	-2.01
PM	disease inc.	1.25E-6	10.8E-9	4.8E-9	1.27E-6	18.1E-9	0	1.31E-9	0	368E-12	-831E-9
IR	kBq U-235 eq	0.338	0.018	0.001	0.357	0.028	0	0.001	0	309E-6	-0.186
ETP- FW	CTUe	643	2.40	1.78	647	3.84	0	0.194	0	55.2	-429
HTTP- C	CTUh	21.8E-9	157E-12	31.6E-12	22.0E-9	239E-12	0	6.2E-12	0	3.54E-12	-14.7E-9
HTTP- NC	CTUh	526E-9	1.70E-9	1.45E-9	529E-9	2.82E-9	0	196E-12	0	99.0E-12	-354E-9
SQP	Pt	42.0	0.828	0.157	43.0	1.51	0	0.172	0	0.070	-27.8

Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change- biogenic, GWP-luluc: Climate change- land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion- elements, ADPF: Abiotic depletion- fossil resources, WDP: Water scarcity, PM: Respiratory inorganics- particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3, A4: Transport to Site. C1: Deconstruction / Demolition, C2: Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary
Disclaimer 1	This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.
Disclaimer 2	The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.
*Disclaimer 3	EP-freshwater: This indicator is calculated both in kg PO_4 eq and kg P eq as required in the charactarization model. (EUTREND model, Struijs et al, 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml)

Resource Use

Impact Category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	16.3	0.029	0.392	16.7	0.048	0	0.004	0	0.003	-11.1
PERM	MJ	0	0	0	0	0	0	0	0	0	0
PERT	MJ	16.3	0.029	0.392	16.7	0.048	0	0.004	0	0.003	-11.1
PENRE	MJ	253	3.82	1.82	259	6.01	0	0.247	0	0.053	-169
PENRM	MJ	0	0	0	0	0	0	0	0	0	0
PENRT	MJ	253	3.82	1.82	259	6.01	0	0.247	0	0.053	-169
SM	kg	0	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0
FW	m^3	0.091	383E-6	0.001	0.092	0.001	0	41.3E-6	0	42.7E-6	-0.062

Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water.

Waste & Output Flows

Impact Category	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
HWD	kg	0	0	0	0	0	0	0	0	0	0
NHWD	kg	0	0	0.062	0.062	0	0	0	0	0	0
RWD	kg	0	0	0	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0
EE (Electrical)	MJ	0	0	0	0	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0	0	0	0	0

Acronyms	HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3, A4: Transport to Site. C1: Deconstruction / Demolition, C2: Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary

Climate impact

Indicator	Unit	A1	A2	A3	A1-A3	A4	C1	C2	C3	C4	D
*GHG-GWP	kg CO_2 eq	24.3	0.290	0.167	24.8	0.451	0	0.016	0	0.004	-16.1

GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology

* 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 equal to the GWP indicator originally defined in EN 15804:2012+A1:2013

References

/GPI/ General Programme Instructions of the International EPD® System. Version 4.0.

/EN ISO 9001/ Quality Management Systems- Requirements

/EN ISO 14001/ Environmental Management Systems- Requirements

/EN ISO 50001/ Energy Management Systems- Requirements

/ISO 14020:2000/ Environmental Labels and Declarations — General principles

/EN 15804:2012+A2:2019/ 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 14040/44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

/PCR for Construction Products and CPC 54 Construction Services/ 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, 2019:14 Version 1.11 DATE 2019-12-20

/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

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