Environmental Product Declaration

In accordance with ISO 14025:2006 for:

XLPE compound Sioplas 2 step (KTT220PA)
from
POLYCOM COMPANY LIMITED

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-08568
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Programme information

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

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
PCR: *PCR2010:16 VERS. 3.02 and UN CPC 347*
PCR review was conducted by: *Technical Committee of the International EPD System*
Life Cycle Assessment (LCA)
LCA accountability: *Le Van Tam, SIS CERT COMPANY LIMITED*
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: *Sergio A. Ballén Zamora, Constructora Acuario Ltda.* Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third-party verifier: ☒ Yes ☐ No

EPDs within the same product category but registered in different EPD programmes may not be comparable.

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

This Environmental Product Declaration (EPD) has been developed in accordance with the International EPD System and the specific requirements outlined in Product Category Rules (PCR). We confirm that this EPD does not duplicate any other EPD developed for the same product and has not been submitted to any other EPD program. Additionally, we declare that this EPD complies with ISO 14020, which ensures that it has been developed using a rigorous, transparent, and consistent methodology to provide credible and scientifically sound information about the environmental performance of the product.

Company information

Owner of the EPD:
POLYCOM COMPANY LIMITED
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To get more information about this environmental declaration or about POLYCOM activities please contact:
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Description of the organisation:
POLYCOM CO., LTD- an XLPE manufacture brand- was established in 2006. Polycom has been constantly growing and growing, reaching the Vietnam No. 1 and becoming to the top of Asia of XLPE manufacture. This result is derived from the heart. The founder's desire to create a standardized enterprise that is admired by the community based on core values.
The company's products with fine lines are rich in aesthetics, convenient and durable features, are manufactured from modern equipment and the production process is strictly controlled from the beginning to ensure perfect product quality.
Towards the sustainable development, the company constantly builds talented personnel, standard management system, optimizes the operation process to expand domestic and foreign markets.

- Value for life
- Creativity day by day
- Accountability to society
- Reputation
- Outstanding Quality

The name POLYCOM represents the heart of the Founders. It is the passion and pursuit of the goal: to create products, different values and excellence for everyone. With experience in the field of chemicals of over 15 years from Korea, from a small production team, POLYCOM has leapfrogged to become a leading brand in Vietnam. We have been consistently committed to our goals since its inception
Management system-related certifications: ISO 9001- and 14001-certificates

Name and location of production site: Lot C.II.I-1, Long Thanh Industrial Zone, Tam An Commune, Long Thanh District, Dong Nai Province, Vietnam.

Product information

Product name:
XLPE compound Sioplas 2 step (KTT220PA)
Product identification:
POLYCOM SILANE XLPE – SIOPLAS® TWO STEP

UN CPC code:
Class 3471 Polymers of ethylene, in primary forms
Geographical scope: Vietnam

Product description:

- KTT220PA is the product code of PolyCom XLPE compound with granule type using for insulation in low voltage wire and cable production.
- Silane XLPE compound – Sioplas® technology (2 steps process) – with KTT220PA code is a latest product of PolyCom that mainly made of imported high-quality LLDPE[1] and other suitable additives such as: cross-linking agents, antioxidant, heat stabilizer, etc. and being produced from a closed production process of extruding and granulating under water.
- KTT220PA complies with two components: Material A - 95% Silane grafted polyethylene; Material B: 5% Catalyst. Material should be used within 2 hours after mixing. Never using material if packaging bag is unsealed, broken or penetrated. The ratio can be changed depend on the demand of customer
- KTT220PA has some key features such as: easy-to-use, simple processing steps, high productivity, stable temperature, fast curing time in ambient weather temperature, much efficient for low voltage cable production under 10KV.

1: LLDPE stands for Linear Low-Density Polyethylene,

Product Specifications

No	Item		Test Method	Unit	Specification	Value
1	Density		ASTM D-1505	g/cm^3	-	0.92
2	Tensile strength		IEC 60811-1-1	N/mm^2	≥ 12.5	≥ 15
3	Elongation at break		IEC 60811-1-1	%	≥ 200	≥ 450
4	After ageing in air oven (135^{0}C,168h)	Variation of tensile	IEC 60811-1-2	%	≤ ±25	1.8
		Variation of elongation	IEC 60811-1-2	%	≤ ±25	-10
5	Hot set test (200^{0}C, 0.2MPa, 15min)	Elongation under load	IEC 60811-2-1	%	≤ 175	100
		Permanent elongation	IEC 60811-2-1	%	≤ 15	5
6	Water absorption (14 days at 85°C)		IEC 60811-1-3	mg/cm^2	≤ 1	0.1
7	Shrinkage (130^{0}C, 1 hour)		IEC 60811-1-3	%	≤ 4	≤ 4
8	Dielectric constant 20^{0}C, 50Hz		IEC 60250	-	-	1.9
9	Volume resistivity 20^{0}C		IEC 60093	Ω.cm	≥ 10^{16}	≥ 10^{17}
10	Volume resistivity 90^{0}C		IEC 60093	Ω.cm	≥ 10^{12}	≥ 10^{13}
11	Dielectric Strength		IEC 60243	KV/mm	-	32

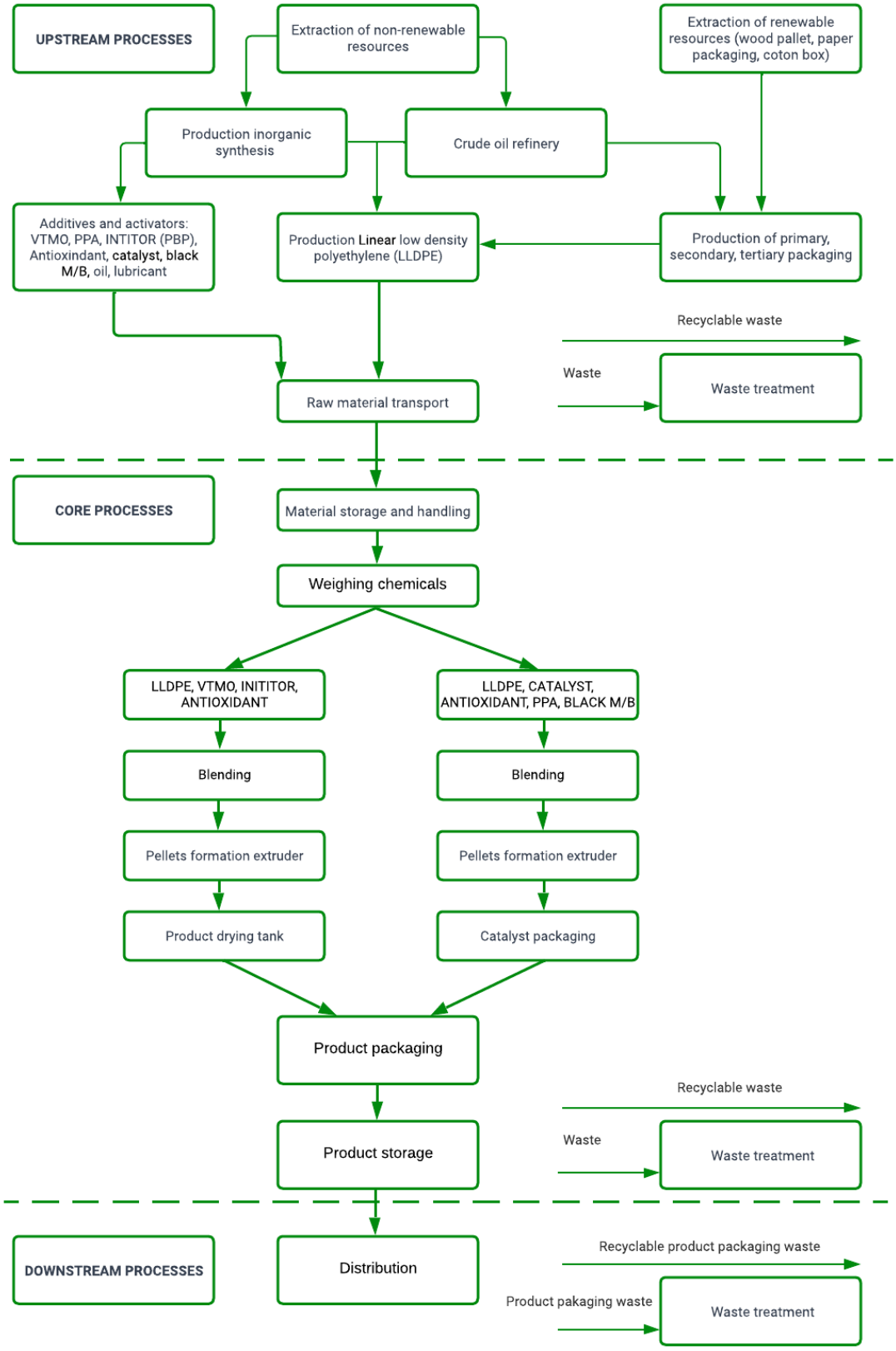
LCA information

Functional unit / declared unit: 1kg of plastic pellet
Time representativeness: The study is based on data representing year-round production. The data is from 2021
Database(s) and LCA software used: The Ecoinvent 3.6, 2019 database and the One Click LCA EPD Generator software: *https://oneclicklcaapp.com/main/*
Description of system boundaries: The scope of the EPD is cradle-to-gate.

Excluded lifecycle stages: Use stage, final disposal
More information: For all Core processes use the Market for electricity, low voltage (Reference product: electricity, low voltage) Ecoinvent 2.6, 2019, country: Vietnam.

For more information please contact: Le Van Tam, Email: tamvan68@gmail.com

System diagram:



Content declaration

Product

Product components	Kg	%	Environmental / hazardous properties
Linear low density Polyethylene	0.958	95.8	NA / no hazardous properties known
Vinyltrimethoxysilane	0.014	1.4	NA / no hazardous properties known
Additives	0.028	2.8	NA / no hazardous properties known
TOTAL	1	100	

Packaging

Distribution packaging:

KTT220PA is packaged in two different ways:

In the first method, it consists of two components - Grafter A (~23.75 kg) and Catalyst B (~1.25 kg), both of which are packaged in a Kraft paper bag. Grafter A is contained in a vacuum-sealed aluminum bag while Catalyst B is contained in a small aluminum bag. The net weight of KTT220PA is 25kg.

In the second method, it consists of the same two components - Grafter A (~522.5 kg) and Catalyst B (~27.5 kg in 2 bags), but they are packaged differently. Grafter A is contained in a vacuum-sealed aluminum bag while each bag of Catalyst B is contained in an aluminum bag inside a Kraft paper bag. Both components are then packed in a carton box packaging.

The ratio of the two components can be adjusted depending on the customer's demand.

The following table displays the packaging components in detail.

Type	Packaging components	kg of packaging per kg of product
Primary	Aluminum bag	0.006
Secondary	Carton Octabin	0.001
Secondary	Paper bag	0.007
Tertiary	Plastic pallet	0.001
Tertiary	Wood pallet	0.099
Tertiary	Polyethylene (PE) film	0.001

Consumer packaging: No consumer packaging

Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product: There is no recycled material in the Polycom product

Results of the environmental performance indicators
Impact category indicators

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Global warming potential (GWP)	Fossil	kg CO_2 eq.	3.23E+00	3.54E-01	1.59E-01	1.25E-05
	Biogenic	kg CO_2 eq.	-3.42E-02	-2.22E-01	0.00E+00	1.37E-02
	Land use and land transformation	kg CO_2 eq.	1.19E-03	5.90E-04	6.86E-05	3.25E-03
	TOTAL	kg CO_2 eq.	3.21E+00	1.31E-01	1.58E-01	3.56E+00
Ozone layer depletion (ODP)		kg CFC 11 eq.	9.45E-06	1.31E-08	3.46E-08	8.06E-04
Acidification potential (AP)		mol H^+ eq.	1.35E-02	2.48E-03	1.66E-03	4.37E-05
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	6.16E-05	1.61E-05	1.45E-06	9.16E+01
	Aquatic marine	kg N eq.	2.80E-03	3.88E-04	4.87E-04	3.56E+00
	Aquatic terrestrial	mol N eq.	3.13E-02	4.23E-03	5.39E-03	1.25E-05
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	1.18E-02	1.27E-03	1.47E-03	1.37E-02
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	3.84E-05	1.78E-06	3.51E-06	3.25E-03
	Fossil resources	MJ, net calorific value	8.52E+01	4.10E+00	2.33E+00	8.06E-04
Water deprivation potential (WDP)		m^3 world eq. deprived	2.04E+00	3.27E-01	8.89E-03	4.37E-05

Resource use indicators

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1.29E+00	1.43E+00	2.52E-02	2.74E+00
	Used as raw materials	MJ, net calorific value	3.29E-01	2.16E+00	0.00E+00	2.49E+00
	TOTAL	MJ, net calorific value	1.62E+00	3.58E+00	2.52E-02	5.22E+00
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	4.06E+01	4.00E+00	2.33E+00	4.69E+01
	Used as raw materials	MJ, net calorific value	4.47E+01	1.06E-01	0.00E+00	4.48E+01
	TOTAL	MJ, net calorific value	8.52E+01	4.10E+00	2.33E+00	9.16E+01
Secondary material (optional)		kg	5.52E-03	3.42E-04	0.00E+00	5.86E-03
Renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (optional)		m^3	9.13E-03	1.94E-03	4.07E-04	1.15E-02

Waste indicators (optional)

PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Hazardous waste disposed	kg	1.19E-01	3.94E-02	3.04E-03	1.62E-01
Non-hazardous waste disposed	kg	3.58E+00	5.99E-01	1.78E-01	4.36E+00
Radioactive waste disposed	kg	1.11E-04	4.68E-06	1.55E-05	1.31E-04

Output flow indicators (optional)

PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Components for reuse	kg	INA	INA	INA	INA
Material for recycling	kg	INA	INA	INA	INA
Materials for energy recovery	kg	INA	INA	INA	INA
Exported energy, electricity	MJ per energy carrier	INA	INA	INA	INA
Exported energy, thermal	MJ per energy carrier	INA	INA	INA	INA

References

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ISO 14040 (2006). “Environmental management- Life cycle assessment - Principles and Framework.”

ISO 14044 (2006). Environmental management- Life cycle assessment - Requirements and guidelines. Geneva, Switzerland, International Organization of Standardization.

PCR 2010:16 (2019). PCR 2010: 16 Plastics in primary forms (Version 3.02), The International EPD System: 29.

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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