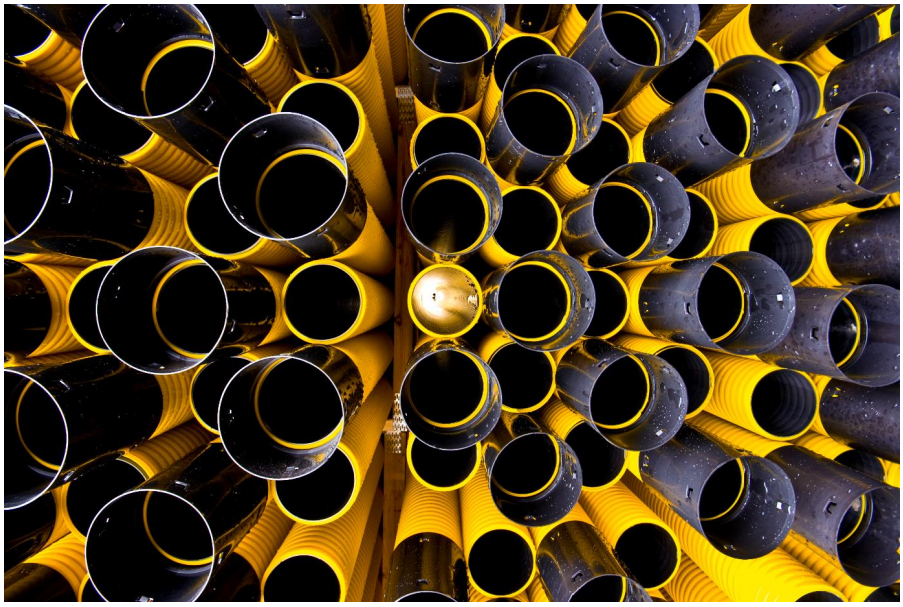


PIPELIFE

DOUBLEWALLED CORRUGATED CABLE PROTECTION PIPES

ENVIRONMETAL PRODUCT DECLARATION

In accordance with ISO14021:2006 and EN 15804 +A2, conducted by

DNV

DNV Headquarters, Veritasveien 1, P.O.Box 300, 1322 Høvik, Norway. Tel: +47 67 57 99 00. www.dnv.com

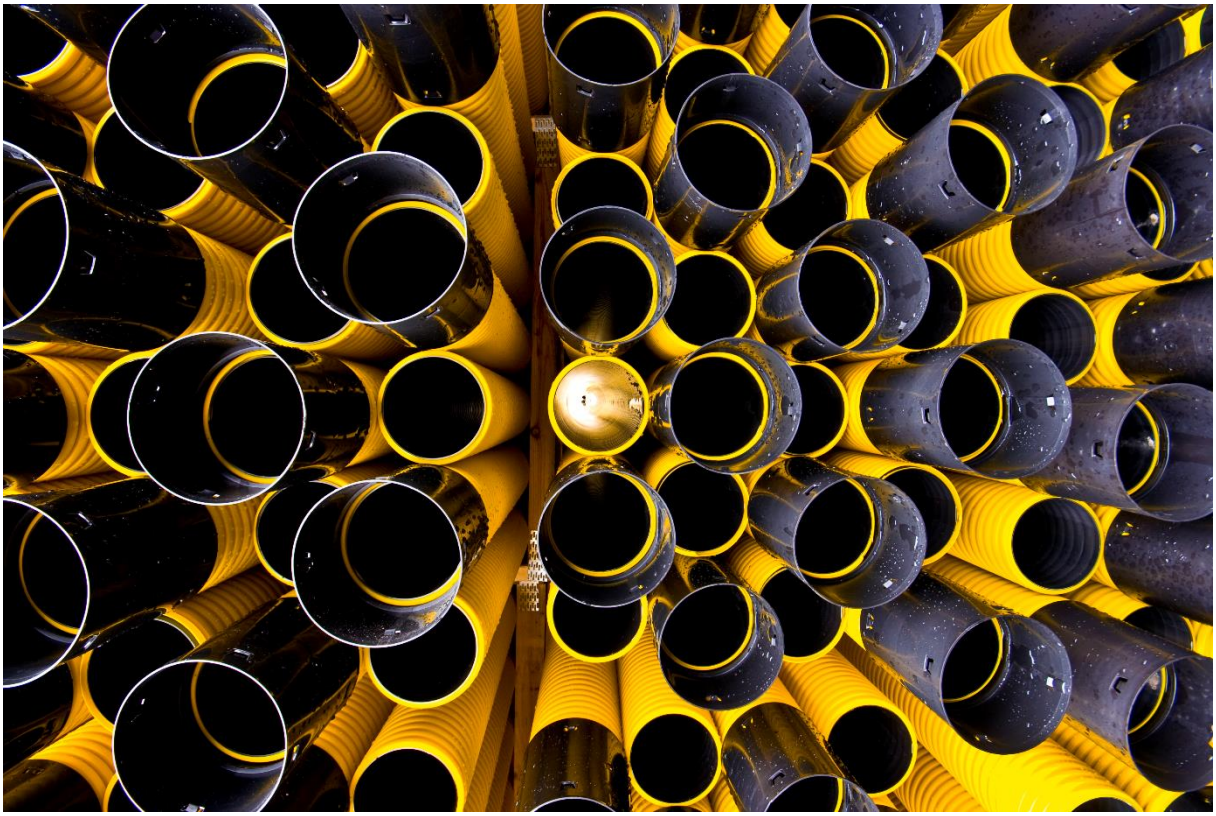
COMPANY INFORMATION

Owner of the EPD: Pipelife Estonia, a member of Pipelife International.

Description of the organization: Pipelife Estonia is a member of Pipelife International. Pipelife is a leading supplier of pipe system solutions for infrastructure, buildings and agriculture.Pipelife Estonia's cable protection pipes have been in use for decades, offer a solid and reliable solution to the highest safety requirements and are produced using green energy. Pipelife's cable protection products have been supplied to windmills, undersea power cables and many other high profile projects.The company has modern cable protection pipes production lines and qualified employees, some of whom have more than 20 years of service and experience.

Pipelife Estonia procures raw materials from well-known reliable suppliers in Europe and the USA. Long-term cooperation and agreements ensure availability of high-quality raw materials. According to the implemented ISO9001 quality management system, all products are tested in a factory laboratory equipped with certified equipment, which ensures that the products comply with the standards. Pipelife is certified according to EN ISO 14001 Environmental Management system and EN ISO 50001 Energy Management system.The company has experience in logistics and on-site deliveries in all Baltic countries, the availability of products is ensured by central stocks in Tallinn and the Riga region.

Name and location of production site: Tallinn, Estonia



PRODUCT INFORMATION

Product name:

PE DOUBLEWALLED CORRUGATED CABLE PROTECTION PIPES 750N
Standard EN 61386-1 and EN 61386-24

PE DOUBLEWALLED CORRUGATED CABLE PROTECTION PIPES 1250N
Standard EN 61386-1 and EN 61386-24

Product description: Pipelife offers a complete range of double-wall polyethylene (PE) cable protection pipes for the construction of electrical and telecommunication networks. The product has high impact resistance and stiffness classes 750N and 1250N ensure excellent mechanical strength. Pipelife PE cable protection pipes are halogen-free and can be installed in concrete. Cable protection pipes are equipped with a sand- or watertight socket. Market-based colours are yellow, red and green, other colours are possible to produce, upon request.

PE corrugated cable protection pipes have been developed with necessary ring stiffness to prevent the duct from collapsing under soil and traffic load. High impact resistance will ensure durability in harsh installation and service conditions. Optional watertight socket and sealings rings prevents from the groundwater leakage up to 0,5 bar. Pipelife cable protection pipes designed working life is over 50 years and are 100% recyclable. Benefits you can expect:

- Low weight, durable and high impact resistance, yet flexible
- Wide product assortment
- Full range of fittings and accessories available

Both flexible and durable, PE piping systems are ideal for challenging terrain and withstand ground pressure and mechanical stress. Our pipe systems adapt easily to various installation requirements.

SYSTEM BOUNDARIES OF THE LIFE CYCLE ASSESSMENT

Raw materials (A1): This phase emphasizes the upstream impacts, originating from the extraction and manufacturing stages of the raw materials. The manufacturing of HDPE granulates, the additives and the packaging mateirals are considered for phase A1.

Transport (A2): The transportation of the raw materials until the gate factory is modeled in phase A2. The materials are mainly transported using EURO6 trucks and this is modeled through the relevant datasets.

Manufacturing (A3): The relevant environmental emisions in the manufacturing stage of pipes are taken into account for phase A3 modeling. The manufacturing processes can be summarized as follows:

Polyethylene and the additives are dosed in the required amount and transferred in the extrusion machine. Before the raw material is supplied into the extrusion process, they are melted until the required temperature and pushed through the extrusion machine to produce inner and outer layers respectively. Consequently, pipes is fed into the corrugator part to provide the latest shape. After cooling down, pipes are printed with the necessary information and branding. Cutting process cuts the pipes in required length and they are delivered to the client after the packaging stage. The energy demand, required in the manufacturing phase, is supplied with 100% renewable electricity.

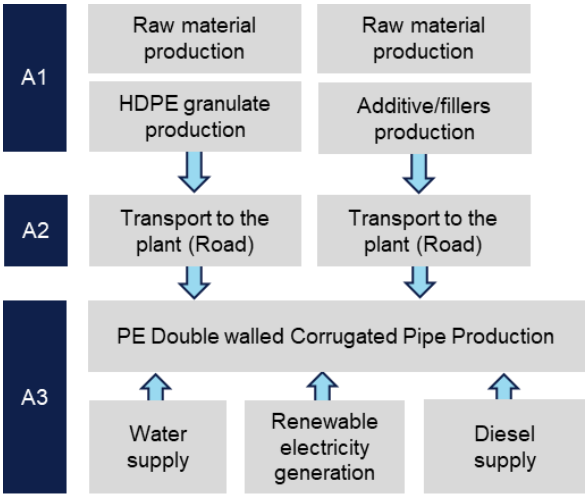


Figure 1 System boundaries of pipe manufacturing

Excluded life cycle stages:

Once the pipes are manufactured, packed and delivered to the customer, pipes are installed underground with the aid of the machinery. During use phase, no emission is transmitted through soil, air and water. Pipes have a high lifetime (50 years) and left under the soil after the use phase. Therefore, no transport and no waste treatment are considered. As a result, construction process stage (A4-A5), use stage (B1-B7) and end of life stage (C1-C4, D) are not included within the scope of this study.

Modules declared:

The declared and excluded modules are shown in the table below.

	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	MND	MDN	MND	MDN	MND	MND	MDN	MDN	MDN	MDN	MDN	MDN	MDN	MDN

Figure 2 Modules declared

LCA INFORMATION

This study is conducted using Life Cycle Assessment methodology, according to the ISO 14040/44. The methodology is compiled in accordance with EN 15804 +A2 and ISO ISO14021:2006 Self-declared environmental claims (Type II environmental labelling).

Functional unit/declared unit: Declared unit for this study is 1 kg of PE pipe.

Reference service life: 50 years

Time representativeness: 01.2021 – 06.2022 (18 months) production data average

Database(s) and LCA software used:

LCA software, Simapro 9.4, and datasets from Ecoinvent 3.8 are used to model the product system and to calculate the environmental impacts. EN 15804 +A2 Method V1.01 / EF 3.0 normalization and weighting set is used for the environment impact assessment.

System boundaries: Cradle to gate

Cut-off criteria and allocation:

The study does not exclude any modules or processes that are defined as mandatory according to EN 15804A1:2012+A2:2019. The study does not exclude any hazardous materials or substances. 5% cut-off criteria is applied during the LCA analysis, which means the materials with a lower contribution of 5% weight are excluded in the calculations. The sealing rings and sockets are excluded within this methodological assumption.

No allocation method is applied since no co-products are manufactured during the production stage of pipes. Energy demand, water and diesel consumption is allocated using the mass of pipe produced in the plant.

ENVIRONMENTAL PERFORMANCE

The figure below summarizes the impact assessment results according to the EN 15804 methodology. Since the functional unit is 1 kg pipe produced, the impact assessment does not differ for the two types of products included in this environmental declaration. Global warming potential (GWP) of double walled corrugated pipes manufactured in Pipelife, Estonia is 2.08 kg CO2-eq. for A1-A3 life cycle stages.

Potential environmental impact

PARAMETER		UNIT	A1	A2	A3	A1-A3
Global warming potential (GWP)	Fossil	kg CO_2 eq.	1.822E+00	3.498E-01	1.185E-02	2.184E+00
	Biogenic	kg CO_2 eq.	-1.051E-01	8.497E-04	8.236E-05	-1.042E-01
	Land use and land transformation	kg CO_2 eq.	1.594E-04	1.199E-04	1.826E-05	2.975E-04
	TOTAL	kg CO_2 eq.	1.717E+00	3.508E-01	1.195E-02	2.080E+00
Depletion potential of the stratospheric ozone layer (ODP)		kg CFC 11 eq.	6.907E-08	7.955E-08	4.488E-09	1.531E-07
Acidification potential (AP)		kg mol H^+ eq.	5.020E-03	9.737E-04	8.163E-05	6.076E-03
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	9.276E-05	2.391E-05	5.808E-06	1.225E-04
	Aquatic marine	kg N eq.	1.157E-03	2.028E-04	1.604E-05	1.376E-03
	Aquatic terrestrial	mol N eq.	1.256E-02	2.203E-03	1.684E-04	1.494E-02
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	5.870E-03	8.438E-04	5.613E-05	6.770E-03
Ozone layer depletion (ODP)		kg CFC 11 eq.-	6.907E-08	7.955E-08	4.488E-09	1.531E-07
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	2.176E-06	1.285E-06	8.494E-07	4.310E-06
	Fossil resources	MJ, net calorific value	6.760E+01	5.306E+00	3.336E-01	7.324E+01
Water deprivation potential (WDP)		m^3 world eq.	1.599E+00	1.534E-02	1.824E-02	1.632E+00

Figure 3 Environmental impact assessment results

BACKGROUND INFORMATION

This EPD was prepared by DNV. DNV is a global provider of certification, verification, assessment, and training services. See www.dnv.com. DNV has a European centre of excellence for life cycle assessment services. Moreover, DNV is an accredited auditor for EPD international (accreditation: registration number 008H rev.01). DNV also has a declaration of accreditation according: EN ISO/IEC 17021-1:2015 under registration number C 024 with the Dutch accreditation council.