Product Environmental Profile

FK9 and FK15 pliable conduits

GEWISS S.p.A.

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Independent verification of the declaration and data, in compliance with ISO 14025: 2010	
Internal : ☐	**External :** ☒
The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain)	
PEPs are compliant with XP C08-100-1:2016 or EN 50693:2019 The components of the present PEP may not be compared with components from any other program.	
Document in compliance with ISO 14025: 2010 « Environmental labels and declarations. Type III environmental declarations »	

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GEWISS Sustainability commitment

GEWISS mission is to create value for our customer and our staff providing innovative and scalable solutions for building, industries and infrastructures, connecting people and things, while improving the safety and the quality of life, driven by **integrity**, culture of **excellence** and **sustainability**.
GEWISS is strongly convinced that being sustainable is essential, and therefore has decided to develop a responsible business model, which promotes respectful conduct towards people and the environment in developing products, solutions and services.

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Reading instructions

The following display rules are used:

- Values are expressed in simplified scientific notation: 0.0038 = 3.80 x 10^{-3} = 3.80E-3 ;
- When the result of the inventory calculation is zero, the value zero is displayed;
- Non-zero values are expressed with three significant figures.

General background

This declaration is an individual declaration covering the life cycle from cradle to grave.

The declaration is available at the following address:
www.pep-ecopassport.org/

Person responsible for this declaration

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Product Environmental Profile

General information

Product category
Product family: “Trunking Systems & conduit Systems”
Sub-family: “Cable trunking systems, floor trunking systems and conduit systems”
Main function: Lengths and accessories intended to accommodate and protect cables
Relevant standards groups and standards: EN 61386-1 and EN 61386-22 standards

Functional Unit
Accommodate and protect the wiring along 1 meter for a Reference Service Life of the product of 20 years. The surface-mounted or embedded flexible conduit system FK 15/20 black (DX15020R) with cross-section 153.94 mm^2 includes the profile and accessories that are representative of standard use.

Reference product
The reference product trade name is: FK 15/20 black (DX15020R)

Products belonging to the same environmental family:

Description	Commercial name
FK 9/16 LIGHT PLIA. CONDUIT	DX10016R; DX10116R; DX10016R10; DX10016R25; DX10016R50
FK 9/20 LIGHT PLIA. CONDUIT	DX10020R; DX10120R; DX10020R10; DX10020R25; DX10020R50
FK 9/25 LIGHT PLIA. CONDUIT	DX10025R; DX10125R; DX10025R10; DX10025R25; DX10025R50
FK 9/32 LIGHT PLIA. CONDUIT	DX10032R; DX10132R; DX10032R10; DX10032R25
FK 9/40 LIGHT PLIA. CONDUIT	DX10040R; DX10140R
FK 9/50 LIGHT PLIA. CONDUIT	DX10050R; DX10150R
FK 15/16 MEDIUM PLIA. CONDUIT	DX15016R; DX15216R; DX15416R; DX15816R; DX15616R; DX16216R; DX15116R; DX15316R; DX15516R; DX15916R; DX15716R; DX16316R; DX15016R10; DX15016R25; DX15016R50
FK 15/20 MEDIUM PLIA. CONDUIT	**DX15020R**; DX15220R; DX15420R; DX15820R; DX15620R; DX16220R; DX15120R; DX15320R; DX15520R; DX15920R; DX15720R; DX16320R; DX15020R10; DX15020R25; DX15020R50
FK 15/25 MEDIUM PLIA. CONDUIT	DX15025R; DX15225R; DX15425R; DX15825R; DX15625R; DX16225R; DX15125R; DX15325R; DX15525R; DX15925R; DX15725R; DX16325R; DX15025R10; DX15025R25; DX15225R25; DX15425R25; DX15625R25; DX15825R25
FK 15/32 MEDIUM PLIA. CONDUIT	DX15232R; DX15432R; DX15832R; DX15632R; DX16232R; DX15332R; DX15532R; DX15932R; DX15732R; DX16332R; DX15032R10
FK 15/40 MEDIUM PLIA. CONDUIT	DX15040R; DX15240R; DX15440R; DX15840R; DX15640R; DX16240R; DX15140R; DX15516R; DX15716R; DX16316R; DX15916R
FK 15/50 MEDIUM PLIA. CONDUIT	DX15050R; DX15250R; DX15450R; DX15850R; DX15650R; DX16250R; DX15150R
FK 15/63 MEDIUM PLIA. CONDUIT	DX15063R; DX15163R

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Reference product characteristics

Product family	*Trunking Systems & conduit Systems*
Sub-family	*Cable trunking systems, floor trunking systems and conduit systems*
Main function	*Accommodate and protect the wiring*
Relevant standard	*BS EN 61386 - Conduit systems for cable management*
Manufacturing site	*Castel san Giovanni, Piacenza, Italy*
Cable management system type	*Pliable conduit*
Range	*FK range*
Reference product	*DX15020R*
Dimension	*20 mm internal diameter*
Main constituents (per 1 m of pliable conduit)	*PVC pliable conduit* *packaging*

Mass of the reference product

Item	Quantity
Total mass (product + packaging) [kg]	*0.058*
Product mass [kg]	*0.055*
Packaging mass [kg]	*0.003*

Constituent materials

Constituent materials of the reference product and packaging are:

Plastic	%	Metal	%	Other	%
Total	**95.3%**	**Total**	**0.0%**	**Total**	**4.7%**
PVC	94.2%			Cardboard	0.3%
LDPE	1.1%			Wood	4.5%

Biogenic carbon content

Biogenic carbon content in the reference product	0.00 kg C
Biogenic carbon content in the packaging	1.34E-03 kg C

Life Cycle Assessment Methodology

The Life Cycle Assessment (LCA) on which this Product Environmental Profile (PEP) is based, complies with the criteria set out in PCR-ed4-EN-2021 09 06 of the PEP ecopassport® program. The life cycle analysis was carried out using SIMAPRO software version V9.5.0 and Ecoinvent V3.9.1 - system model: allocation, cut-off by classification. The reference service life has been modelled according to the provisions of PSR-0003-ed2-EN-2023 08 12. The end-of-life modelling follows the default scenarios proposed in PSR-0003-ed2-EN-2023 08 12.

Geographical representativeness	The scenarios are representative of the manufacturing stage in Italy and the installation, use and end-of-life treatment in Europe.
Technological representativeness	The PEP is representative of pliable conduits in PVC with a ringed profile. The covered range of products includes: • FK 9 (light) conduits in different diameters, with or without cable puller feeder, in grey • FK 15 (medium) conduits in different diameters, with or without cable puller feeder and in six different colourways.

Life Cycle stages

Manufacturing stage, A1-A3

The product consists of the following elements:

- Product: 1 m PVC pliable conduit
- Components: none
- Packaging: (77% wood, 4% cardboard, 18% LDPE)

The production of all these elements was included in the study.
Inbound transport was included in the study.
Manufacturing waste has been taken into account in this stage.

The dataset used to determine the impacts of the electricity used during the manufacturing stage has been modelled on the basis of the production mix as declared by the electricity supplier, which includes over 47% of renewable energy.

Distribution stage, A4

The distribution stage includes transport of the packaged product by an average lorry from the manufacturer's last logistics platform to the installation site.
The product is distributed and installed in Europe.
No reconditioning of the packaging has been considered.

Installation stage, A5

The installation phase includes:

- Manufacturing, distribution and end-of-life of installation scrap (3%);
- Management of packaging waste.

Use stage, B1-B7

The use phase of the reference products is modeled as per the PSR-0003-ed2.1-EN-2023 12 08, resulting in no impact.

End-of-life stage, C1-C4

The end-of-life of the product is modelled according to the default scenario provided by the_PSR-0003-ed2.1-EN-2023 12 08.
No energy consumption is considered for uninstalling the product.
The pliable conduit is transported over 100km before 100% incinerated without energy recovery.
The boundaries of this stage consider the processes up to the point of substitution in accordance with the rules of PCR-ed4-EN-2021 09 06.

Benefits and loads beyond the system boundaries (module D)

Module D includes the net benefits and loads beyond system boundaries, which have been modelled according to the PCR-ed4-EN-2021 09 06. The treatment of wood, plastic and cardboard waste generates net benefits and loads, as for the impacts prevented by recycling the material and the impacts prevented by waste-to-energy recovery.
The dataset used to determine the avoided impacts for electricity is « Electricity, medium voltage {RER}| market group for | Cut-off, U ».

Environmental impacts

The results presented below were obtained using the methods defined in PCR-ed4-EN-2021 09 06, and are referred to the Functional Unit.

Indicator	Unit	Manufacturing A1 - A3	Distribution A4	Installation A5	Use stage B1-B7	End of Life C1 - C4	Total Life Cycle	Module D
Acidification	mol H+ eq	4.61E-04	2.72E-05	1.78E-05	0.00	8.90E-05	5.95E-04	-2.11E-03
Climate change	kg CO2 eq	1.06E-01	5.84E-03	7.81E-03	0.00	1.17E-01	2.37E-01	1.25E-03
Climate change – Biogenic	kg CO2 eq	-9.65E-04	4.89E-06	1.12E-04	0.00	1.85E-04	-6.63E-04	-3.36E-03
Climate change – Fossil	kg CO2 eq	1.07E-01	5.83E-03	7.70E-03	0.00	1.17E-01	2.38E-01	-4.87E-06
Climate change - Land use and LU change	kg CO2 eq	8.95E-05	2.85E-06	3.26E-06	0.00	1.51E-05	1.11E-04	-6.85E-02
Ecotoxicity, freshwater - part 1	CTUe	3.67E-01	3.06E-02	1.97E-01	0.00	6.14	6.74	-2.54E-03
Ecotoxicity, freshwater - part 2	CTUe	1.90E-01	1.09E-02	7.28E-03	0.00	3.61E-02	2.44E-01	-6.95E-02
Ecotoxicity, freshwater – inorganics	CTUe	5.27E-01	3.99E-02	2.03E-01	0.00	6.17	6.94	-4.08E-04
Ecotoxicity, freshwater - organics - p.1	CTUe	7.62E-03	3.11E-04	3.30E-04	0.00	2.85E-03	1.11E-02	-1.15E-03
Ecotoxicity, freshwater - organics - p.2	CTUe	2.25E-02	1.24E-03	8.29E-04	0.00	3.30E-03	2.79E-02	-4.67E-10
Particulate matter	disease inc.	3.83E-09	5.74E-10	1.64E-10	0.00	8.07E-10	5.38E-09	-3.08E-06
Eutrophication, marine	kg N eq	8.94E-05	1.08E-05	4.44E-06	0.00	2.71E-05	1.32E-04	-6.03E-07
Eutrophication, freshwater	kg P eq	3.40E-05	4.20E-07	1.19E-06	0.00	5.07E-06	4.07E-05	-3.02E-05
Eutrophication, terrestrial	mol N eq	8.88E-04	1.16E-04	3.95E-05	0.00	2.50E-04	1.29E-03	-1.76E-11
Human toxicity, cancer	CTUh	6.76E-11	3.14E-12	2.87E-12	0.00	2.29E-11	9.65E-11	-1.77E-12
Human toxicity, cancer - inorganics	CTUh	3.50E-11	1.28E-12	1.70E-12	0.00	1.92E-11	5.72E-11	-1.58E-11
Human toxicity, cancer - organics	CTUh	3.26E-11	1.86E-12	1.17E-12	0.00	3.69E-12	3.93E-11	-5.66E-11
Human toxicity, non-cancer	CTUh	1.77E-09	6.53E-11	7.93E-11	0.00	7.41E-10	2.65E-09	-5.49E-11
Human toxicity, non-cancer - inorganics	CTUh	1.69E-09	5.59E-11	7.60E-11	0.00	7.33E-10	2.55E-09	-1.62E-12
Human toxicity, non-cancer - organics	CTUh	8.24E-11	9.38E-12	3.26E-12	0.00	8.11E-12	1.03E-10	-1.80E-04
Ionising radiation	kBq U-235 eq	1.57E-02	1.16E-04	5.01E-04	0.00	8.27E-04	1.71E-02	-1.17E-01
Land use	Pt	6.02E-01	6.33E-02	2.43E-02	0.00	1.02E-01	7.91E-01	-3.67E-11

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Indicator	Unit	Manufacturing A1 - A3	Distribution A4	Installation A5	Use stage B1-B7	End of Life C1 - C4	Total Life Cycle	Module D
Ozone depletion	kg CFC11 eq	5.21E-08	1.28E-10	1.64E-09	0.00	2.28E-09	5.61E-08	-1.18E-05
Photochemical ozone formation	kg NMVOC eq	3.54E-04	4.04E-05	1.49E-05	0.00	7.97E-05	4.89E-04	-5.54E-02
Resource use, fossils	MJ	2.69	8.42E-02	9.02E-02	0.00	1.94E-01	3.06	-3.64E-09
Resource use, minerals and metals	kg Sb eq	1.20E-06	1.82E-08	3.94E-08	0.00	8.60E-08	1.35E-06	-1.41E-03
Water use	m3 depriv.	1.64E-01	3.67E-04	9.83E-03	0.00	1.63E-01	3.37E-01	0.00
Total use of primary energy during the life cycle	MJ	3.06E-01	1.65E-03	9.95E-03	0.00	2.34E-02	3.41E-01	-4.50E-02
Net use of fresh water	m3	1.31E-03	1.27E-05	1.89E-04	0.00	4.97E-03	6.49E-03	-3.65E-05
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	1.72E-01	1.33E-03	1.92E-02	0.00	1.74E-02	2.10E-01	-1.23E-02
Use of renewable primary energy resources used as raw materials	MJ	4.54E-02	0.00	-1.21E-02	0.00	0.00	3.33E-02	-1.12E-02
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	2.18E-01	1.33E-03	7.11E-03	0.00	1.74E-02	2.44E-01	-2.34E-02
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	5.93E-02	3.18E-04	1.10E-02	0.00	3.60E-03	7.42E-02	-5.17E-03
Use of non-renewable primary energy resources used as raw materials	MJ	2.89E-02	0.00	-8.14E-03	0.00	2.44E-03	2.32E-02	-1.64E-02
Total use of non renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	8.82E-02	3.18E-04	2.84E-03	0.00	6.04E-03	9.74E-02	-2.16E-02
Use of secondary materials	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Use of renewable secondary fuels	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Use of non-renewable secondary fuels	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hazardous waste disposed of	kg	5.55E-05	2.19E-06	5.22E-05	0.00	1.50E-03	1.61E-03	0.00
Non-hazardous waste disposed of	kg	1.23E-02	5.32E-03	2.73E-03	0.00	3.23E-02	5.27E-02	0.00
Radioactive waste disposed of	kg	4.07E-06	2.83E-08	1.30E-07	0.00	2.11E-07	4.44E-06	0.00

Indicator	Unit	Manufacturing A1 - A3	Distribution A4	Installation A5	Use stage B1-B7	End of Life C1 - C4	Total Life Cycle	Module D
Components for reuse	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials for recycling	kg	0.00	0.00	1.29E-03	0.00	0.00	1.29E-03	0.00
Materials for energy recovery	kg	0.00	0.00	1.09E-03	0.00	0.00	1.09E-03	0.00
Exported energy	MJ	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Extrapolation rules

According to this environmental analysis, proportionality rules can be used to evaluate the impacts of other products belonging to the same environmental family.

The technical characteristics of these references are shown in the table below:

Technical characteristics of the homogeneous environmental family	
Product	*PVC pliable conduit*
Function	*Accommodate and protect the wiring*
Type	*Light and medium pliable conduit made in PVC, in different diameters and colourways, in versions with or without cable puller feeder.*
Manufacturing site	*Castel san Giovanni, Piacenza, Italy*
Constituent materials	*Pliable conduit (1m)* *Packaging*

The extrapolation parameters have been calculated following the method provided by PSR -0003-ed2.1-EN-2023 08 12 and are shown in the table below. Users can multiply the indicators at any stage or for the whole life cycle by these coefficients, to use the environmental data provided in this PEP for cable management systems belonging to the same environmental family as the reference product.

Description	Commercial name	Internal diam. (mm)	Cross-section (mm^2)	Parameter
FK 9/16 LIGHT PLIA. CONDUIT	DX10016R; DX10116R; DX10016R10; DX10016R25; DX10016R50	16	91.61	0.55
FK 9/20 LIGHT PLIA. CONDUIT	DX10020R; DX10120R; DX10020R10; DX10020R25; DX10020R50	20	158.37	0.78
FK 9/25 LIGHT PLIA. CONDUIT	DX10025R; DX10125R; DX10025R10; DX10025R25; DX10025R50	25	271.72	1.09
FK 9/32 LIGHT PLIA. CONDUIT	DX10032R; DX10132R; DX10032R10; DX10032R25	32	471.44	1.64
FK 9/40 LIGHT PLIA. CONDUIT	DX10040R; DX10140R	40	754.77	2.00
FK 9/50 LIGHT PLIA. CONDUIT	DX10050R; DX10150R	50	1256.64	2.73
FK 15/16 MEDIUM PLIA. CONDUIT	DX15016R; DX15216R; DX15416R; DX15816R; DX15616R; DX16216R; DX15116R; DX15316R; DX15516R; DX15916R; DX15716R; DX16316R; DX15016R10; DX15016R25; DX15016R50	16	89.92	0.73
FK 15/20 MEDIUM PLIA. CONDUIT	**DX15020R**; DX15220R; DX15420R; DX15820R; DX15620R; DX16220R; DX15120R; DX15320R; DX15520R; DX15920R; DX15720R; DX16320R; DX15020R10; DX15020R25; DX15020R50	**20**	**153.94**	**1.00**
FK 15/25 MEDIUM PLIA. CONDUIT	DX15025R; DX15225R; DX15425R; DX15825R; DX15625R; DX16225R; DX15125R; DX15325R; DX15525R; DX15925R; DX15725R; DX16325R; DX15025R10; DX15025R25; DX15225R25; DX15425R25; DX15625R25; DX15825R25	25	263.02	1.42
FK 15/32 MEDIUM PLIA. CONDUIT	DX15232R; DX15432R; DX15832R; DX15632R; DX16232R; DX15332R; DX15532R; DX15932R; DX15732R; DX16332R; DX15032R10	32	459.96	2.00
FK 15/40 MEDIUM PLIA. CONDUIT	DX15040R; DX15240R; DX15440R; DX15840R; DX15640R; DX16240R; DX15140R; DX15516R; DX15716R; DX16316R; DX15916R	40	735.42	2.67
FK 15/50 MEDIUM PLIA. CONDUIT	DX15050R; DX15250R; DX15450R; DX15850R; DX15650R; DX16250R; DX15150R	50	1231.63	4.15
FK 15/63 MEDIUM PLIA. CONDUIT	DX15063R; DX15163R	63	2010.91	5.55