Product Environmental Profile

# DF Flexible conduits

# GEWISS S.p.A.

| | |
|---|---|
| Registration number: GWGS-00011-V01.01-EN | Drafting rules: ***PCR-ed4-EN-2021 09 06***<br>Supplemented by ***PSR-0003-ed2.1-EN-2023 12 08*** |
| Vérifier accreditation n°: **VH51** | Information and reference documents: **www.pep-ecopassport.org** |
| Date of issue: **12-2025** | Validity period: **5 years** |
| **Indipendent 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 and EN 50693:2019<br><br>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 » | |

# Product Environmental Profile

## 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.

## Disclaimer

The information contained in this declaration is provided under the responsibility of GEWISS in accordance with standard UNI EN ISO 14025, PCR-ed4-EN-2021 09 06 and PSR-0003-ed2.1-EN-2023 12 08.

The information contained in this document is updated as of the date of its issuance. Such information is the property of GEWISS. Any inappropriate use that alters its meaning and/or damages GEWISS's reputation is strictly prohibited.

## 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

***QHSE & Sustainability Director***

sustainability@gewiss.com - **www.gewiss.com**

***Address:***
Via Domenico Bosatelli 1 - 24069 CENATE SOTTO BG, Italy
Phone +39 035 946111

## General information

**Product category**
**Product family**: “Trunking systems and conduit systems”
**Sub-family**: “Flexible conduit systems”
**Main function**: Lengths and accessories intended to accommodate and protect cables
**Relevant standards groups and standards:** EN 61386-1 and EN 61386-23 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 DF 16G grey (DX30016) with cross-section 201.06 mm2 includes the profile and accessories that are representative of standard use.

**Reference product**
The reference product trade name is: DF 16G grey (DX30016)

**Products belonging to the same environmental family:**

| Description | Commercial name |
|---|---|
| DF 8 FLEXIBLE CONDUIT | DX30008; DX30018 |
| DF 10 FLEXIBLE CONDUIT | DX30010; DX30110 |
| DF 12 FLEXIBLE CONDUIT | DX30012; DX30112 |
| DF 14 FLEXIBLE CONDUIT | DX30014; DX30114 |
| **DF 16 FLEXIBLE CONDUIT** | **DX30016**; DX30116 |
| DF 20 FLEXIBLE CONDUIT | DX30020; DX30120 |
| DF 22 FLEXIBLE CONDUIT | DX30022; DX30122 |
| DF 25 FLEXIBLE CONDUIT | DX30025; DX30125 |
| DF 28 FLEXIBLE CONDUIT | DX30028; DX30128 |
| DF 32 FLEXIBLE CONDUIT | DX30032; DX30132 |
| DF 35 FLEXIBLE CONDUIT | DX30035; DX30135 |
| DF 40 FLEXIBLE CONDUIT | DX30040; DX30140 |
| DF 50 FLEXIBLE CONDUIT | DX30050; DX30150 |
| DF 60 FLEXIBLE CONDUIT | DX30060; DX30160 |
| LIGHT 12 GREY FLEXIBLE CONDUIT | DX30812 |
| LIGHT 16 GREY FLEXIBLE CONDUIT | DX30816 |
| LIGHT 20 GREY FLEXIBLE CONDUIT | DX30820 |
| LIGHT 25 GREY FLEXIBLE CONDUIT | DX30825 |

# Product Environmental Profile

## Reference product characteristics

| | |
|---|---|
| ***Product family*** | *Trunking systems and conduit systems* |
| ***Sub-family*** | *Flexible conduit systems* |
| ***Main function*** | *Accommodate and protect the wiring* |
| ***Relevant standard*** | *EN 61386-1 and EN 61386-23 standards* |
| ***Manufacturing site*** | *Castel san Giovanni, Piacenza, Italy* |
| ***Cable management system type*** | *Flexible conduit* |
| ***Range*** | *DF range* |
| ***Reference product*** | *DX30016* |
| ***Dimension*** | *16 internal diameter* |
| ***Main constituents (per 1 m of Flexible conduit)*** | *PVC Flexible conduit*<br>*Packaging* |

## Mass of the reference product

| Item | Quantity |
|---|---|
| ***Total mass (product + packaging) [kg]*** | *0.111* |
| ***Product mass [kg]*** | *0.100* |
| ***Packaging mass [kg]*** | *0.011* |

## Constituent materials

Constituent materials of the reference product and packaging are:

| Plastic | % | Metal | % | Other | % |
|---|---|---|---|---|---|
| **Total** | **91.6%** | **-** | **-** | Wood | **8.4%** |
| PVC | 90.2% | - | - | | |
| LDPE | 1.2% | - | - | | |
| PP | 0.2% | - | - | | |

## Biogenic carbon content

| | |
|---|---|
| **Biogenic carbon content in the reference product** | 0 kg C |
| **Biogenic carbon content in the packaging** | 4.39E-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 Flexible conduits in PVC (rigid and plastic PVC). The covered range of products includes DF conduits with 1% of internally recycled input material, grey and black, with the following diameters: 8, 10, 12, 14, 16, 20, 22, 25, 28, 32, 35, 40, 50, 60. |

## Life Cycle stages

**Manufacturing stage, A1-A3**

The product consists of the following elements:

• Product: 1 m PVC Flexible conduit
• Components: none
• Packaging: (85.6% wood, 12.1% LDPE, 2.3% Polypropylene)

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 for year 2024, which includes the following sources: 67% natural gas, 12% coal, 8% renewable, 5% nuclear, 1% oil products, 7% other sources.

**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 and worldwide.
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 Flexible 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 and plastic 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 internal recycling of PVC generates is accounted as a load in this stage.
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 | Total use B1-B7 | End of Life C1-C4 | Total Life cycle | Module D |
|---|---|---|---|---|---|---|---|---|
| Acidification | mol H+ eq | 1.86E-03 | 4.84E-05 | 6.55E-05 | 0.00 | 1.55E-04 | 2.13E-03 | -1.97E-05 |
| Climate change | kg CO2 eq | 3.20E-01 | 1.00E-02 | 2.19E-02 | 0.00 | 2.12E-01 | 5.64E-01 | -4.15E-03 |
| Climate change - Biogenic | kg CO2 eq | -2.79E-02 | 8.31E-06 | 2.91E-03 | 0.00 | 3.36E-04 | -2.47E-02 | 5.86E-05 |
| Climate change - Fossil | kg CO2 eq | 3.48E-01 | 1.00E-02 | 1.90E-02 | 0.00 | 2.12E-01 | 5.88E-01 | -4.20E-03 |
| Climate change - Land use and LU change | kg CO2 eq | 1.15E-04 | 4.91E-06 | 5.63E-06 | 0.00 | 2.67E-05 | 1.52E-04 | -1.72E-06 |
| Ecotoxicity, freshwater - part 1 | CTUe | 6.33E+00 | 5.24E-02 | 5.29E-01 | 0.00 | 1.12E+01 | 1.81E+01 | -6.86E-02 |
| Ecotoxicity, freshwater - part 2 | CTUe | 2.57E-01 | 1.86E-02 | 1.15E-02 | 0.00 | 6.28E-02 | 3.50E-01 | -6.22E-04 |
| Ecotoxicity, freshwater - inorganics | CTUe | 6.50E+00 | 6.83E-02 | 5.37E-01 | 0.00 | 1.12E+01 | 1.83E+01 | -6.85E-02 |
| Ecotoxicity, freshwater - organics - p.1 | CTUe | 9.26E-03 | 5.33E-04 | 5.42E-04 | 0.00 | 5.10E-03 | 1.54E-02 | -3.57E-05 |
| Ecotoxicity, freshwater - organics - p.2 | CTUe | 7.13E-02 | 2.13E-03 | 2.75E-03 | 0.00 | 5.69E-03 | 8.19E-02 | -6.52E-04 |
| Particulate matter | disease inc. | 4.23E-08 | 9.80E-10 | 1.39E-09 | 0.00 | 1.32E-09 | 4.59E-08 | -4.71E-10 |
| Eutrophication, marine | kg N eq | 2.71E-04 | 1.89E-05 | 1.27E-05 | 0.00 | 4.65E-05 | 3.49E-04 | -2.64E-06 |
| Eutrophication, freshwater | kg P eq | 5.46E-05 | 7.18E-07 | 2.08E-06 | 0.00 | 9.11E-06 | 6.65E-05 | -7.74E-07 |
| Eutrophication, terrestrial | mol N eq | 2.86E-03 | 2.03E-04 | 1.18E-04 | 0.00 | 4.25E-04 | 3.60E-03 | -2.77E-05 |
| Human toxicity, cancer | CTUh | 1.51E-09 | 5.37E-12 | 4.83E-11 | 0.00 | 4.08E-11 | 1.61E-09 | -1.54E-12 |
| Human toxicity, cancer - inorganics | CTUh | 1.73E-10 | 2.20E-12 | 6.61E-12 | 0.00 | 3.46E-11 | 2.17E-10 | -1.55E-11 |
| Human toxicity, cancer - organics | CTUh | 1.34E-09 | 3.18E-12 | 4.17E-11 | 0.00 | 6.22E-12 | 1.39E-09 | -4.32E-11 |
| Human toxicity, non-cancer | CTUh | 6.14E-09 | 1.11E-10 | 2.42E-10 | 0.00 | 1.33E-09 | 7.82E-09 | -4.21E-11 |
| Human toxicity, non-cancer - inorganics | CTUh | 5.96E-09 | 9.54E-11 | 2.34E-10 | 0.00 | 1.32E-09 | 7.61E-09 | -1.14E-12 |
| Human toxicity, non-cancer - organics | CTUh | 1.82E-10 | 1.60E-11 | 7.40E-12 | 0.00 | 1.24E-11 | 2.18E-10 | -4.70E-04 |
| Ionising radiation | kBq U-235 eq | 1.71E-02 | 1.99E-04 | 6.04E-04 | 0.00 | 1.47E-03 | 1.93E-02 | -8.88E-03 |
| Land use | Pt | 3.03E+00 | 1.08E-01 | 1.84E-01 | 0.00 | 1.68E-01 | 3.49E+00 | 7.09E-10 |
| Ozone depletion | kg CFC11 eq | 4.77E-08 | 2.19E-10 | 1.57E-09 | 0.00 | 4.12E-09 | 5.36E-08 | -1.29E-05 |

| Indicator | Unit | Manufacturing A1-A3 | Distribution A4 | Installation A5 | Total use B1-B7 | End of Life C1-C4 | Total Life cycle | Module D |
|---|---|---|---|---|---|---|---|---|
| Photochemical ozone formation | kg NMVOC eq | 1.13E-03 | 7.04E-05 | 4.50E-05 | 0.00 | 1.35E-04 | 1.38E-03 | -8.48E-02 |
| Resource use, fossils | MJ | 6.18E+00 | 1.44E-01 | 2.12E-01 | 0.00 | 3.32E-01 | 6.87E+00 | 8.83E-09 |
| Resource use, minerals and metals | kg Sb eq | 1.17E-06 | 3.10E-08 | 4.29E-08 | 0.00 | 1.52E-07 | 1.40E-06 | -5.46E-04 |
| Water use | m3 depriv. | 2.57E-01 | 6.26E-04 | 1.68E-02 | 0.00 | 2.96E-01 | 5.70E-01 | 0.00E+00 |
| Total use of primary energy during the life cycle | MJ | 1.27E+00 | 2.82E-03 | 6.91E-02 | 0.00 | 4.22E-02 | 1.38E+00 | -7.62E-03 |
| Net use of fresh water | m3 | 3.83E-03 | 2.16E-05 | 3.92E-04 | 0.00 | 9.04E-03 | 1.33E-02 | -4.47E-05 |
| Use of renewable primary energy, excluding renewable primary energy resources used as raw materials | MJ | 5.83E-01 | 2.28E-03 | 8.09E-02 | 0.00 | 3.13E-02 | 6.98E-01 | 4.18E-02 |
| Use of renewable primary energy resources used as raw materials | MJ | 1.49E-01 | 0.00E+00 | -4.29E-02 | 0.00 | 0.00E+00 | 1.06E-01 | -4.73E-02 |
| Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) | MJ | 7.32E-01 | 2.28E-03 | 3.80E-02 | 0.00 | 3.13E-02 | 8.04E-01 | -5.50E-03 |
| Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials | MJ | -1.38E+00 | 5.43E-04 | 5.47E-02 | 0.00 | -1.74E+00 | -3.07E+00 | 2.93E-02 |
| Use of non-renewable primary energy resources used as raw materials | MJ | 1.91E+00 | 0.00E+00 | -2.36E-02 | 0.00 | 1.75E+00 | 3.64E+00 | -3.14E-02 |
| Total use of non renewable primary energy resources (primary energy and primary energy resources used as raw materials) | MJ | 5.35E-01 | 5.43E-04 | 3.11E-02 | 0.00 | 1.09E-02 | 5.77E-01 | -2.12E-03 |
| Use of secondary materials | kg | 0.01 | 0.00 | 0.00 | 0.00 | 0.00E+00 | 0.01 | 0.00 |
| Use of renewable secondary fuels | MJ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00E+00 | 0.00 | 0.00 |
| Use of non-renewable secondary fuels | MJ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00E+00 | 0.00 | 0.00 |
| Hazardous waste disposed of | kg | 1.15E-04 | 3.73E-06 | 1.14E-04 | 0.00 | 2.73E-03 | 2.96E-03 | 0.00 |
| Non-hazardous waste disposed of | kg | 4.06E-02 | 9.06E-03 | 7.39E-03 | 0.00 | 5.74E-02 | 1.14E-01 | 0.00 |
| Radioactive waste disposed of | kg | 4.48E-06 | 4.83E-08 | 1.58E-07 | 0.00 | 3.76E-07 | 5.06E-06 | 0.00 |
| Components for reuse | kg | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Indicator | Unit | Manufacturing<br>A1-A3 | Distribution<br>A4 | Installation<br>A5 | Total use<br>B1-B7 | End of Life<br>C1-C4 | Total Life cycle | Module D |
|---|---|---|---|---|---|---|---|---|
| Materials for recycling | kg | 0.00 | 0.00 | 3.62E-03 | 0.00 | 0.00 | 3.62E-03 | 0.00 |
| Materials for energy recovery | kg | 0.00 | 0.00 | 3.55E-03 | 0.00 | 0.00 | 3.55E-03 | 0.00 |
| Exported energy | MJ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Biogenic carbon content in the reference product | kg | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Biogenic carbon content in packaging | kg | 4.39E-03 | 0.00 | 0.00 | 0.00 | 0.00 | 4.39E-03 | -1.39E-03 |

## 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 Flexible conduit* |
| ***Function*** | *Accommodate and protect the wiring* |
| ***Type*** | *Flexible conduits in PVC (rigid and plastic PVC) with 1% of internally recycled input material, grey and black, with the following internal diameters: 8, 10, 12, 14, 16, 20, 22, 25, 28, 32, 35, 40, 50, 60* |
| ***Manufacturing site*** | *Castel san Giovanni, Piacenza, Italy* |
| ***Constituent materials*** | *Flexible conduit (1m)*<br>*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 protection systems belonging to the same environmental family as the reference product.

| Description | Commercial name | Internal diam. (mm) | Cross-section (mm2) | Parameter |
|---|---|---|---|---|
| DF 8 FLEXIBLE CONDUIT | DX30008; DX30018 | 8 | 50.24 | 0.53 |
| DF 10 FLEXIBLE CONDUIT | DX30010; DX30110 | 10 | 78.50 | 0.57 |
| DF 12 FLEXIBLE CONDUIT | DX30012; DX30112 | 12 | 113.04 | 0.78 |
| DF 14 FLEXIBLE CONDUIT | DX30014; DX30114 | 14 | 153.86 | 0.90 |
| **DF 16 FLEXIBLE CONDUIT** | **DX30016**; DX30116 | **16** | **200.96** | **1.00** |
| DF 20 FLEXIBLE CONDUIT | DX30020; DX30120 | 20 | 314.00 | 1.37 |
| DF 22 FLEXIBLE CONDUIT | DX30022; DX30122 | 22 | 379.94 | 1.60 |
| DF 25 FLEXIBLE CONDUIT | DX30025; DX30125 | 25 | 490.63 | 1.77 |
| DF 28 FLEXIBLE CONDUIT | DX30028; DX30128 | 28 | 615.44 | 2.20 |
| DF 32 FLEXIBLE CONDUIT | DX30032; DX30132 | 32 | 803.84 | 2.42 |
| DF 35 FLEXIBLE CONDUIT | DX30035; DX30135 | 35 | 961.63 | 2.75 |
| DF 40 FLEXIBLE CONDUIT | DX30040; DX30140 | 40 | 1256.00 | 3.30 |
| DF 50 FLEXIBLE CONDUIT | DX30050; DX30150 | 50 | 1962.50 | 4.35 |
| DF 60 FLEXIBLE CONDUIT | DX30060; DX30160 | 60 | 2826.00 | 6.10 |
| LIGHT 12 GREY FLEXIBLE CONDUIT | DX30812 | 12 | 113.04 | 0.67 |
| LIGHT 16 GREY FLEXIBLE CONDUIT | DX30816 | 16 | 200.96 | 0.85 |
| LIGHT 20 GREY FLEXIBLE CONDUIT | DX30820 | 20 | 314.00 | 1.19 |
| LIGHT 25 GREY FLEXIBLE CONDUIT | DX30825 | 25 | 490.63 | 1.53 |