Product Environmental Profile

Reference product name: FRHF power 2x1,5

456	0,06756	10,3	15637
kg CO_2 eq.	kg Sb eq.	m^3	MJ
Climate change - total	Resource use - minerals & metals (ADPe)	Net use of fresh water	Total Primary Energy

The above environmental impacts are "cradle to gate" or "Manufacturing phase" values (A1-A3) for 1km of cable

PEP ecopassport N°:	NXNS-00709-V01.01-EN	Product Category Rules:	PEP-PCR-ed4-EN-2021 09 06
		Product Specific Rules:	PSR-0001-ed4-EN-2022 11 16
Verifier accreditation N°:	VH42	Program information & documents:	www.pep-ecopassport.org
Date of publication:	10-2025	Validity period:	5 years

Independent verification of the declaration and data, in accordance with ISO 14025 : 2006

Internal ☐ External ☒

The PCR critical review was conducted by a panel of experts chaired by Julie Orgelet (Ddemain).

PEP are compliant with XP C08-100-1 :2016 or EN 50693
The elements of the present PEP cannot be compared with elements from another program.

Compliant with ISO 14025: 2006 "Environmental labels and declarations - Type III environmental declarations".

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Nexans Corporate Social Responsibility commitment

Corporate Social Responsibility which is the confluence between environmental, economic and social aspects, is an integral part of the Nexans's strategy. Nexans has been supporting the **United Nations Global Compact** since December 2008 and has implemented internal action plans to integrate Sustainable Development at all levels. It includes responsible governance, healthy and safe working environment for employees, reduced global carbon footprint through the **Nexans Carbon Neutrality strategy.**

Reference Product description

FRHF power 2x1,5

Fire-resistant power cable with solid or stranded, round XLPE insulated copper conductors and HFFR sheath for fixed installations indoors and outdoors. Not to be laid in soil nor directly in cast concrete. For locations where safety requires the operation of alarm, control, signalling and energy circuits also during a fire. The conductor insulation must be protected against UV-radiation. Installations must be in accordance with national regulations and rules of installations. No requirement for CPR-classification.

Product covered:

The aforementioned product belongs to the category power transmission wires and cables of the Product Specific Rules (PSR) for Wires, Cables and Accessories (PSR-0001) of the PEP ecopassport® program.

The PEP concerns the product FRHF power 2x1,5.

Functional unit:

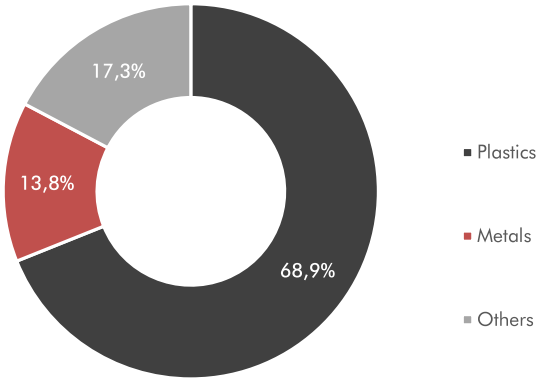
To transmit energy expressed for 1A over a distance of 1km during 30 years and a 70% use rate, in accordance with the relevant standards, detailed in the data sheet available on our website www.nexans.com.
Lifetime and use rate correspond to the Building - Residential / Tertiary / Industrial application as defined in the table given in Appendix 1 of the specific rules for wires, cables and accessories."

This PEP has been drawn up considering the following parameters:

- 1 km for manufacturing, distribution and end-of-life stages
- 1 km and 1 A for the use stage

The potential impact of the use stage shall be calculated by the PEP user considering the real amperage through the product during the use phase by multiplying the impact by the square of the intensity. This PEP is valid in the intensity range taking into account the maximum allowable intensity.

Constituent materials



The total mass of the reference product and packaging is 202,02 kg/km. Constituent materials are distributed as given in the graph.

Nexans has implemented necessary procedures to ensure product compliance with the relevant standards when products are put on the market.

II. LIFE CYCLE ASSESSMENT

Manufacturing

- The reference product is manufactured in Finland.
- The electricity mix model for the manufacturing stage is from Finland ≤1 kV.
- The reference year for the collected LCI is 2024
- All Nexans sites in Finland have implemented a certified Environmental Management System according to ISO14001 standard.

Packaging designed to reduce environmental impacts:

- Packaging was designed according to the applicable standard (Directive 94/62/EC).
- The packaging considered to transport the reference product is a 7K. It is considered to be used 5 times.

Distribution

The transportation scenario for the impact assessment of the distribution stage is local, considering:

- 1000 km covered by truck.

Installation

Installation processes for the reference product are considered out of the scope of the study, according to the Product Specific Rules document for "Wires, Cables and Accessories" from PEP ecopassport® program. Only 5% of product losses and packaging disposal is considered inthis stage

Use

The use scenario considers the operation of the reference product in Building - Residential / Tertiary / Industrial, with:

- Reference Lifetime (RLT) = 30 years
- Use rate = 70%

Considering the aforementioned hypotheses, the energy consumption over the RLT at use stage is 4451,83 kWh/km.

This value is calculated for I=1 A. For the effective consumption of the cable installed, multiply the value given by the square of intensity.

- The electricity mix considered at use stage is Finland ≤1 kV.
- No maintenance is necessary to ensure the operation of the cable during the considered reference lifetime.

The reference lifetime mentioned in this PEP corresponds to an average data used for impact calculation, taking into account the average time a cable might be installed in a system before being disposed. **It CANNOT BE considered as an equivalent to the guaranteed product technical lifetime.**

End-of-life

- The transportation scenario chosen for the impact analysis associated with end-of-life stage is 1000 km covered by truck.
- The assumed electricity mix model for end-of-life stage is Finland ≤1 kV.

The cables are recycled through a grinding process for the separation of polymers and metal parts. The separated materials are then assumed to be recycled, incinerated or landfilled according to scenarios given in PEF annex C_V2.1_May2020

If the customer wants to recycle their cables at the end-of-life, Nexans has the know-how of cables recycling at their end-of-life through the structure named Nexans Recycling Services (recycling.services@nexans.com), to offer a complete solution for the recycling of polymers and metals.

III. ENVIRONMENTAL IMPACTS

The reference product FRHF power 2x1,5 belongs to the Product Category Rules (PEP-PCR-ed4-EN-2021 09 06) and Product Specific Rules (PSR-0001-ed4-EN-2022 11 16) from the PEP ecopassport® program. According to the PCR, the life cycle impact assessment of the reference product takes into account manufacturing, distribution, installation, use and end-of-life stages.

All the necessary hypotheses to evaluate the environmental impacts of the reference product lifecycle are presented in the previous sections (electricity mix models, use scenario, etc). The software used to perform the evaluation is EIME 6.3.1-3, with the Nexans-2025-04 database.

Representativeness: the study is representative of cable production in Finland with a local scenario for distribution. The electricity model for use is Finland ≤1 kV and the model for end-of-life is Finland ≤1 kV.

Impact results for 1000 m of FRHF power 2x1,5

Mandatory indicators:

Environmental indicator/flows	Unit	A1-Raw materials	A2-Transport to manufacturer	A3-Manufacturing process	*Total manufacturing A1-A3*	A4-Distribution to customer	A5-Installation*	B6-Use** (for 1 A)	C1-C4-End of life	TOTAL (for 1 A)
Climate change - total (GWP)	kg CO_2 eq.	4,03E+02	3,36E+01	1,94E+01	*4,56E+02*	9,59E+00	3,72E+01	5,56E+02	6,16E+01	1,12E+03
Climate change - fossil (GWPf)	kg CO_2 eq.	3,87E+02	3,36E+01	2,82E+01	*4,49E+02*	9,59E+00	2,64E+01	5,20E+02	6,09E+01	1,07E+03
Climate change - biogenic (GWPb)	kg CO_2 eq.	1,45E+01	1,09E-04	-8,83E+00	*5,66E+00*	3,92E-05	1,07E+01	3,60E+01	6,76E-01	5,30E+01
Climate change - land use & land use change (GWPlu)	kg CO_2 eq.	1,57E+00	4,02E-05	2,25E-06	*1,57E+00*	1,45E-05	7,26E-02	0,00E+00	1,32E-05	1,64E+00
Ozone layer depletion (ODP)	kg CFC-11 eq.	3,45E-05	3,31E-07	1,10E-06	*3,60E-05*	1,16E-07	1,82E-06	4,83E-06	1,44E-06	4,42E-05
Acidification potential of soil and water (AP)	mol H+ eq.	2,28E+00	3,28E-01	3,47E-01	*2,96E+00*	1,51E-02	1,62E-01	7,79E+00	2,70E-01	1,12E+01
Eutrophication - freshwater (Epf)	kg P eq.	1,03E-02	1,02E-04	2,69E-04	*1,07E-02*	3,58E-05	5,13E-04	6,94E-03	2,70E-04	1,84E-02
Eutrophication - marine (Epm)	kg N eq.	3,72E-01	7,29E-02	4,48E-02	*4,90E-01*	2,75E-03	2,77E-02	6,55E-01	5,02E-02	1,23E+00
Eutrophication - terrestrial (Ept)	mol N eq.	4,05E+00	7,99E-01	9,90E-01	*5,84E+00*	3,01E-02	3,40E-01	2,33E+01	7,66E-01	3,03E+01
Photochemical ozone formation - human health (POCP)	kg NMVOC eq.	1,47E+00	2,11E-01	1,28E-01	*1,81E+00*	9,74E-03	9,83E-02	1,69E+00	1,44E-01	3,75E+00
Resource use - minerals & metals (ADPe)	kg Sb eq.	6,75E-02	9,72E-06	1,83E-05	*6,76E-02*	3,42E-06	3,12E-03	3,92E-04	1,69E-05	7,11E-02
Resource use - fossils (ADPf)	MJ	1,31E+04	5,59E+02	1,32E+03	*1,49E+04*	1,70E+02	7,91E+02	3,38E+04	1,10E+03	5,08E+04
Water use (WU)	m3 eq.	4,30E+02	9,79E-01	5,76E+00	*4,37E+02*	3,45E-01	2,06E+01	6,14E+01	5,26E+00	5,25E+02
Use of renewable primary energy excluding renewable primary energy used as raw material	MJ	1,10E+02	1,60E+00	4,30E+02	*5,42E+02*	5,37E-01	3,80E+01	1,36E+04	2,06E+02	1,44E+04
Use of renewable primary energy used as raw material (PERM)	MJ	0,00E+00	0,00E+00	1,31E+02	*1,31E+02*	0,00E+00	6,56E+00	0,00E+00	0,00E+00	1,38E+02
Total use of renewable primary energy resources (PERT)	MJ	1,10E+02	1,60E+00	5,61E+02	*6,73E+02*	5,37E-01	4,45E+01	1,36E+04	2,06E+02	1,45E+04
Non-renewable primary energy excluding non-renewable primary energy resources used as	MJ	6,59E+03	5,59E+02	1,30E+03	*8,46E+03*	1,70E+02	4,92E+02	3,38E+04	1,10E+03	4,40E+04
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	6,49E+03	0,00E+00	2,01E+01	*6,51E+03*	0,00E+00	3,00E+02	0,00E+00	0,00E+00	6,81E+03
Total use of non-renewable primary energy resources (PENRT)	MJ	1,31E+04	5,59E+02	1,32E+03	*1,50E+04*	1,70E+02	7,92E+02	3,38E+04	1,10E+03	5,08E+04
Use of secondary material (SM)	kg	0,00E+00	0,00E+00	0,00E+00	*0,00E+00*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels (RSF)	MJ	0,00E+00	0,00E+00	0,00E+00	*0,00E+00*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non renewable secondary fuels (NRSF)	MJ	0,00E+00	0,00E+00	0,00E+00	*0,00E+00*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water (FW)	m3	1,01E+01	2,28E-02	1,45E-01	*1,03E+01*	8,04E-03	4,84E-01	1,44E+00	1,04E-01	1,23E+01
Hazardous waste disposed (HWD)	kg	4,10E+00	1,11E-01	3,22E+00	*7,44E+00*	4,01E-02	2,61E+00	3,62E+01	1,93E+01	6,56E+01
Non hazardous waste disposed (NHWD)	kg	4,93E+00	2,67E+00	5,16E+00	*1,28E+01*	8,90E-01	1,46E+00	1,42E+02	6,31E+00	1,64E+02
Radioactive waste disposed	kg	3,60E-02	2,10E-03	8,36E-04	*3,89E-02*	7,05E-04	2,07E-03	1,08E-02	2,20E-03	5,47E-02
Components for reuse (CRU)	kg	0,00E+00	0,00E+00	7,20E+00	*7,20E+00*	0,00E+00	3,60E-01	0,00E+00	0,00E+00	7,56E+00
Materials for recycling (MFR)	kg	0,00E+00	0,00E+00	2,80E+00	*2,80E+00*	0,00E+00	1,94E+00	0,00E+00	3,12E+01	3,59E+01
Materials for energy recovery (MER)	kg	0,00E+00	0,00E+00	4,13E-02	*4,13E-02*	0,00E+00	3,61E-03	0,00E+00	3,38E-02	7,87E-02
Exported Energy (EE)	MJ	0,00E+00	0,00E+00	0,00E+00	*0,00E+00*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

* Installation stage includes only 5% product lossses & packaging disposal. Impacts related to installation processes might be completed by the PEP user.

**Energy losses in use phase are calculted for 1A current intensity, the PEP user must multiply this impact by square of real current intensity

Environmental indicator/flows	Unit	Total
Biogenic carbon content - product (BC-pro)	kg of C	0,00E+00
Biogenic carbon content - packaging (BC-pack)	kg of C	2,73E+00

Biogenic carbon storage is calculated according to the -1/+1 assessment methodology & according to EN 16485.

Optional indicators:

Environmental indicator/flow	Unit	A1-Raw materials	A2-Transport to manufacturer	A3-Manufacturing process	*Total A1-A3*	A4-Distribution to customer	A5-Installation*	B6-Use** (for 1 A)	C1-C4-End of life	TOTAL (for 1 A)
Total Primary Energy (TPE)	MJ	1,32E+04	5,61E+02	1,88E+03	*1,56E+04*	1,71E+02	8,36E+02	4,73E+04	1,30E+03	6,53E+04
EF-particulate matter (EF-PM)	Disease occurance	2,66E-05	1,84E-06	2,96E-06	*3,14E-05*	1,30E-07	1,64E-06	7,51E-05	2,12E-06	1,10E-04
Ionising radiation, human health (IR)	kg U235 eq.	7,00E+01	9,54E-01	1,22E+02	*1,93E+02*	3,39E-01	1,23E+01	3,78E+03	5,51E+01	4,04E+03
Ecotoxicity, freshwater (Eco-fw)	CTUe	3,22E+03	7,79E+02	1,79E+02	*4,18E+03*	2,80E+02	3,02E+02	1,69E+03	9,91E+02	7,45E+03
Human toxicity, cancer (HT-c)	CTUh-c	2,26E-06	5,30E-09	7,21E-08	*2,34E-06*	1,88E-09	1,11E-07	7,55E-08	6,21E-08	2,59E-06
Human toxicity, non-cancer (HT-nc)	CTUh-nc	6,34E-06	1,02E-07	1,37E-07	*6,58E-06*	3,58E-08	3,36E-07	2,97E-06	3,33E-07	1,03E-05
Land use (LU)	No dimension	4,24E+02	1,14E-01	1,23E+00	*4,25E+02*	4,10E-02	1,97E+01	2,77E+01	9,71E-01	4,74E+02

Environmental indicators are calculated according to JRC method - EF3.1.