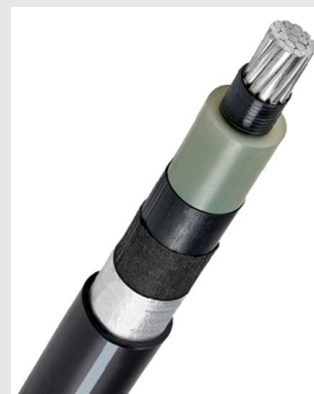


Product Environmental Profile

Family technical name: FR-N20XA8E-AR unipolaire

Reference product name: FR-N20XA8E-AR 1x240 BGN9



5,41E+03

kg CO₂ eq.

Climate change - total



5,04E-04

kg Sb eq.

Resource use - minerals & metals (ADPe)



2,90E+01

m³

Net use of fresh water



6,83E+04

MJ

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-00128-V02.01-EN Verifier accreditation N°: VH42 Date of publication: 04-2026	Product Category Rules: PEP-PCR-ed4-EN-2021 09 06
	Product Specific Rules: PSR-0001-ed4-EN-2022 11 16 Program information & documents: www.pep-ecopassport.org
	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 (Ddemail).	
PEP are compliant with EN 50693:2019 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".	



REALIZED BY:

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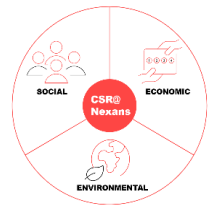
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<https://www.nexans.com>



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

FR-N20XA8E-AR 1x240 BGN9

Medium voltage connection cables for underground distribution network.

Products covered:

The aforementioned products belong 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 concern all the products in the range FR-N20XA8E-AR unipolaire and the reference product of the PEP is FR-N20XA8E-AR 1x240 BGN9.

Functional unit:

To transmit energy expressed for 1A over a distance of 1km during 40 years and a 100% use rate, in accordance with the relevant standards, detailed in the data sheet available on our website www.nexans.com.

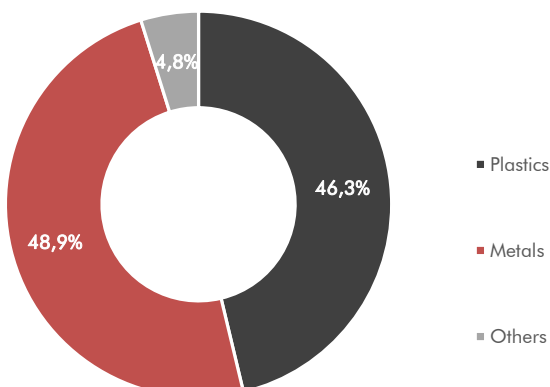
Lifetime and use rate correspond to the Infrastructure - Energy distribution networks application as defined in the table given in Appendix 1 of the specific rules for wires, cables and accessories."

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 1367,45 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.



Manufacturing



- All the products in the range FR-N20XA8E-AR unipolaire are manufactured in France.
- The electricity mix model for the manufacturing stage is from France > 1 kV.
- The reference year for the collected LCI is 2025
- All Nexans sites in France 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 IBGA. 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 in this stage.

Use



The use scenario considers the operation of the reference product in Infrastructure - Energy distribution networks, with:

- Reference Lifetime (RLT) = 40 years
- Use rate = 100%

Considering the aforementioned hypotheses, the energy consumption over the RLT at use stage is 43,8 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 France > 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 France > 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 default scenarios given in the PCR.

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 FR-N20XA8E-AR 1x240 BGN9 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 6.3.4-7, with the Nexans-2025-04 database.

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

Impact results for 1000 m of FR-N20XA8E-AR 1x240 BGN9

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.	4,98E+03	3,27E+02	1,03E+02	5,41E+03	7,50E+01	3,99E+02	3,76E+00	6,77E+02	6,57E+03
Climate change - fossil (GWPf)	kg CO ₂ eq.	4,91E+03	3,27E+02	1,71E+02	5,41E+03	7,50E+01	3,24E+02	3,55E+00	6,71E+02	6,49E+03
Climate change - biogenic (GWPb)	kg CO ₂ eq.	6,67E+01	6,12E-04	-6,77E+01	-1,06E+00	3,07E-04	7,55E+01	2,10E-01	5,75E+00	8,04E+01
Climate change - land use & land use change (GWPlu)	kg CO ₂ eq.	4,68E-01	2,26E-04	3,23E-05	4,68E-01	1,13E-04	2,34E-02	0,00E+00	3,43E-04	4,92E-01
Ozone layer depletion (ODP)	kg CFC-11 eq.	4,48E-04	2,04E-06	1,31E-05	4,63E-04	9,10E-07	2,59E-05	4,17E-08	4,20E-05	5,32E-04
Acidification potential of soil and water (AP)	mol H ⁺ eq.	2,79E+01	7,43E+00	1,37E+00	3,67E+01	1,18E-01	2,08E+00	1,76E-02	3,12E+00	4,21E+01
Eutrophication - freshwater (Epf)	kg PO43- eq.	3,52E-02	6,19E-04	2,22E-03	3,80E-02	2,80E-04	2,08E-03	1,18E-04	2,77E-03	4,33E-02
Eutrophication - marine (Epm)	kg N eq.	3,46E+00	1,69E+00	2,36E-01	5,38E+00	2,15E-02	3,08E-01	2,43E-03	4,41E-01	6,15E+00
Eutrophication - terrestrial (Ept)	mol N eq.	3,73E+01	1,85E+01	2,91E+00	5,86E+01	2,36E-01	3,43E+00	4,05E-02	5,77E+00	6,81E+01
Photochemical ozone formation - human health (POCP)	kg NMVOC eq.	1,34E+01	4,79E+00	7,58E-01	1,90E+01	7,62E-02	1,07E+00	7,10E-03	1,50E+00	2,16E+01
Resource use - minerals & metals (ADPe)	kg Sb eq.	3,60E-04	5,95E-05	8,53E-05	5,04E-04	2,68E-05	3,86E-05	4,24E-06	1,82E-04	7,56E-04
Resource use - fossils (ADPf)	MJ	1,58E+05	4,86E+03	1,00E+04	1,73E+05	1,33E+03	9,68E+03	4,94E+02	1,43E+04	1,98E+05
Water use (WU)	m3 eq.	1,53E+03	5,95E+00	4,48E+01	1,58E+03	2,70E+00	8,78E+01	6,91E-01	1,50E+02	1,82E+03
Use of renewable primary energy excluding renewable primary energy used as raw material	MJ	8,28E+02	1,12E+01	1,04E+03	1,88E+03	4,20E+00	1,86E+02	5,61E+01	1,44E+03	3,57E+03
Use of renewable primary energy used as raw material (PERM)	MJ	0,00E+00	0,00E+00	9,44E+02	9,44E+02	0,00E+00	4,72E+01	0,00E+00	0,00E+00	9,91E+02
Total use of renewable primary energy resources (PERT)	MJ	8,28E+02	1,12E+01	1,99E+03	2,83E+03	4,20E+00	2,33E+02	5,61E+01	1,44E+03	4,56E+03
Non-renewable primary energy excluding non-renewable primary energy resources used as	MJ	2,85E+04	4,86E+03	9,88E+03	4,33E+04	1,33E+03	3,22E+03	4,94E+02	1,43E+04	6,26E+04
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	2,21E+04	0,00E+00	1,34E+02	2,22E+04	0,00E+00	1,10E+03	0,00E+00	0,00E+00	2,33E+04
Total use of non-renewable primary energy resources (PENRT)	MJ	5,06E+04	4,86E+03	1,00E+04	6,55E+04	1,33E+03	4,32E+03	4,94E+02	1,43E+04	8,59E+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	2,72E+01	1,39E-01	1,61E+00	2,90E+01	6,29E-02	1,70E+00	1,61E-02	4,33E+00	3,51E+01
Hazardous waste disposed (HWD)	kg	5,88E+01	6,25E-01	1,31E+01	7,25E+01	3,14E-01	1,93E+01	1,54E-01	1,27E+02	2,20E+02
Non hazardous waste disposed (NHWD)	kg	1,30E+03	1,91E+01	2,74E+01	1,34E+03	6,96E+00	8,18E+01	7,09E-01	1,80E+02	1,61E+03
Radioactive waste disposed	kg	1,06E+00	1,46E-02	8,83E-03	1,08E+00	5,52E-03	5,72E-02	1,69E-04	3,90E-02	1,18E+00
Components for reuse (CRU)	kg	0,00E+00	0,00E+00	5,35E+01	5,35E+01	0,00E+00	2,67E+00	0,00E+00	0,00E+00	5,61E+01
Materials for recycling (MFR)	kg	0,00E+00	0,00E+00	4,77E+01	4,77E+01	0,00E+00	4,10E+01	0,00E+00	7,12E+02	8,00E+02
Materials for energy recovery (MER)	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,24E+00	0,00E+00	4,49E+01	4,71E+01
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 losses & packaging disposal. Impacts related to installation processes might be completed by the PEP user.

**Energy losses in use phase are calculated 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	1,96E+01

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	5,14E+04	4,87E+03	1,20E+04	6,83E+04	1,34E+03	4,56E+03	5,50E+02	1,57E+04	9,05E+04
EF-particulate matter (EF-PM)	Disease occurrence	3,11E-04	3,93E-05	1,52E-05	3,66E-04	1,02E-06	2,01E-05	5,77E-07	2,41E-05	4,11E-04
Ionising radiation, human health (IR)	kg U235 eq.	6,77E+03	5,64E+00	1,03E+03	7,80E+03	2,65E+00	4,28E+02	6,43E+01	6,51E+02	8,95E+03
Ecotoxicity, freshwater (Eco-fw)	CTU _e	2,83E+04	4,47E+03	1,23E+03	3,40E+04	2,19E+03	2,68E+03	5,71E+00	1,10E+04	4,99E+04
Human toxicity, cancer (HT-c)	CTU _{h-c}	6,40E-06	3,18E-08	6,87E-08	6,50E-06	1,47E-08	3,33E-07	6,25E-10	1,23E-07	6,98E-06
Human toxicity, non-cancer (HT-nc)	CTU _{h-nc}	1,90E-05	6,17E-07	1,13E-06	2,07E-05	2,80E-07	1,41E-06	1,65E-08	4,90E-06	2,73E-05
Land use (LU)	No dimension	5,44E+03	6,40E-01	6,36E+00	5,45E+03	3,21E-01	2,73E+02	1,81E-01	1,15E+01	5,74E+03

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



V. EXTRAPOLATION RULES FOR THE PRODUCT FAMILY FR-N20XA8E-AR unipolaire

General information

The extrapolation rules have been calculated based on the environment impact assessment results of 3 products in the range FR-N20XA8E-AR unipolaire. The reference product is FR-N20XA8E-AR 1x240 BGN9. The weight of reference product is 1314 kg/km.

The reference product has 1 active conductor(s) and a resistivity of 0,125 ohm/km.

The extrapolation rules below apply to 1000m of product. In the following sections, the product weight is expressed in kg for 1000m of cable, where applicable.

Extrapolation rules for each life cycle stage

	Life cycle stage	Applicable extrapolation principle	Formula to calculate each environmental indicator	Example: If the product weight is 1324 kg/km, each indicator value shall be calculated with:	Mean deviation of extrapolation rule
	A1-A3 Manufacturing	Linear variation versus weight	Indicator = a x Cable weight + b	Indicator = (1324 x a) + b	6,15%
	A4-Distribution to customer	Linear variation versus weight	Indicator = a x Cable weight + b	Indicator = 1324 x a + b.	0,17%
	A5-Installation	Linear variation versus weight	Indicator = a x Cable weight + b	Indicator = 1324 x a + b.	6,78%
	B6-Use	Variation versus resistivity ratio	Indicator = (Product Resistivity / Reference product Resistivity) x (Nb of active conductors / Nb of active conductors in the reference product) x Indicator value for Reference Product	Example: If the product resistivity is 1,2 ohm/km & has 1 active conductor, Indicator = (1,2/0,125) x (1/1) x indicator of reference product.	0,00%
	C1-C4-End of life	Linear variation versus weight	Indicator = a x Cable weight + b	Indicator = (1324 x a) + b	1,02%

Table to be considered for extrapolation calculations of different life cycle stages:

	A1-A3 Raw materials								A4-Distribution to customer		A5-Installation		C1-C4 End of life	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b
GWP	5,40E+00	-1,58E+03	-	-					5,58E-02	1,87E+00	3,61E-01	-6,89E+01	5,65E-01	-6,91E+01
GWPf	5,41E+00	-1,59E+03	-	-					5,58E-02	1,87E+00	3,12E-01	-8,06E+01	5,60E-01	-6,88E+01
GWPb	-6,42E-03	1,19E+01	-	-					2,28E-07	7,66E-06	4,94E-02	1,17E+01	4,58E-03	-2,82E-01
GWPlu	5,72E-04	-2,86E-01	-	-					8,44E-08	2,83E-06	2,86E-05	-1,43E-02	3,43E-07	-1,14E-04
ODP	2,53E-07	1,60E-04	-	-					6,77E-10	2,27E-08	1,52E-08	7,36E-06	4,22E-08	-1,43E-05
AP	3,81E-02	-1,30E+01	-	-					8,81E-05	2,95E-03	2,10E-03	-6,64E-01	2,75E-03	-5,23E-01
EpF	2,27E-05	1,16E-02	-	-					2,09E-07	6,99E-06	1,27E-06	5,81E-04	2,15E-06	-5,43E-05
Epm	5,58E-03	-1,89E+00	-	-					1,60E-05	5,36E-04	3,07E-04	-9,26E-02	3,41E-04	-8,20E-03
Ept	6,09E-02	-2,05E+01	-	-					1,75E-04	5,88E-03	3,41E-03	-9,98E-01	4,44E-03	-7,36E-02
POCP	1,83E-02	-4,70E+00	-	-					5,67E-05	1,90E-03	1,01E-03	-2,35E-01	1,24E-03	-1,36E-01
ADPe	5,53E-07	-1,72E-04	-	-					1,99E-08	6,67E-07	3,87E-08	-9,79E-06	1,62E-07	-3,26E-05
ADPf	1,73E+02	-4,73E+04	-	-					9,91E-01	3,32E+01	9,51E+00	-2,43E+03	1,23E+01	-2,07E+03
WU	1,04E+00	2,94E+02	-	-					2,01E-03	6,74E-02	6,06E-02	1,25E+01	1,50E-01	-4,91E+01
PÈRE	1,92E+00	-3,61E+00	-	-					3,12E-03	1,05E-01	1,66E-01	-1,07E+00	1,15E+00	-7,51E+01
PERM	6,21E-01	1,39E+02	-	-					0,00E+00	0,00E+00	3,11E-02	6,96E+00	0,00E+00	0,00E+00
PERT	2,54E+00	1,36E+02	-	-					3,12E-03	1,05E-01	1,97E-01	5,89E+00	1,15E+00	-7,51E+01
PENRE	3,17E+01	8,54E+03	-	-					9,91E-01	3,32E+01	2,43E+00	3,66E+02	1,23E+01	-2,07E+03
PENRM	1,05E+01	9,96E+03	-	-					0,00E+00	0,00E+00	5,21E-01	4,97E+02	0,00E+00	0,00E+00
PENRT	4,22E+01	1,85E+04	-	-					9,91E-01	3,32E+01	2,95E+00	8,63E+02	1,23E+01	-2,07E+03
SM	0,00E+00	0,00E+00	-	-					0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	0,00E+00	0,00E+00	-	-					0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	0,00E+00	0,00E+00	-	-					0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	1,46E-02	1,19E+01	-	-					4,68E-05	1,57E-03	9,74E-04	5,18E-01	4,46E-03	-1,62E+00
HWD	3,93E-02	2,67E+01	-	-					2,33E-04	7,83E-03	1,23E-02	3,68E+00	8,30E-02	1,95E+01
NHWD	5,35E-01	6,65E+02	-	-					5,18E-03	1,74E-01	3,95E-02	3,09E+01	1,81E-01	-6,20E+01
RWD	4,17E-04	5,47E-01	-	-					4,10E-06	1,38E-04	2,35E-05	2,70E-02	3,64E-05	-9,38E-03
CRU	3,52E-02	7,88E+00	-	-					0,00E+00	0,00E+00	1,76E-03	3,94E-01	0,00E+00	0,00E+00
MFR	8,75E-02	-4,96E+01	-	-					0,00E+00	0,00E+00	4,06E-02	-1,20E+01	6,85E-01	-2,00E+02
MER	0,00E+00	0,00E+00	-	-					0,00E+00	0,00E+00	2,48E-03	-1,08E+00	4,96E-02	-2,16E+01
EE	0,00E+00	0,00E+00	-	-					0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
TPE	4,47E+01	1,86E+04	-	-					9,94E-01	3,33E+01	3,15E+00	8,69E+02	1,35E+01	-2,14E+03
EF-PM	3,91E-07	-1,42E-04	-	-					7,56E-10	2,54E-08	2,10E-08	-7,16E-06	2,06E-08	-3,25E-06
IR	9,52E+00	-4,06E+03	-	-					1,97E-03	6,62E-02	5,05E-01	-2,03E+02	5,09E-01	-1,92E+01
Eco-fw	2,99E+01	-4,09E+03	-	-					1,63E+00	5,46E+01	2,24E+00	-2,10E+02	9,15E+00	-1,12E+03
HT-c	3,73E-09	2,07E-06	-	-					1,09E-11	3,67E-10	1,93E-10	1,03E-07	1,02E-10	-1,21E-08
HT-nc	2,07E-08	-5,96E-06	-	-					2,08E-10	6,99E-09	1,34E-09	-3,30E-07	4,42E-09	-9,68E-07
LU	6,43E+00	-3,01E+03	-	-					2,39E-04	8,00E-03	3,22E-01	-1,50E+02	9,93E-03	-1,62E+00



VI. PRODUCTS COVERED BY THE PEP

The products covered by the given PEP are represented in the below table with a ●

The below table also provides the maximum linear resistance (ohm/km) of core at 20°C in D.C for 6 wires according to the standard IEC 60228 for each cable included in the cable in the family FR-N20XA8E-AR unipolaire.

Section (mm ²)	Resistance (ohm/km)	N° of CONDUCTORS																		
		1	2	3	4	5	6	7	8	9	10	12	14	19	21	24	27	30	37	40
0,5	-																			
0,75	0																			
1	0																			
1,5	0																			
2,5	0																			
4	7,41																			
6	4,61																			
10	3,08																			
16	1,91																			
25	1,2																			
35	0,868																			
50	0,641	●																		
70	0,443																			
95	0,32	●																		
120	0,253																			
150	0,206	●																		
185	0,164																			
240	0,125	●																		
300	0,1																			
400	0,0778	●																		
500	0,0605																			
630	0,0489	●																		
800	0,0165																			
1000	0,0149																			
1200	0,0119																			
1400	0																			
1600	0																			
1800	0																			
2000	0																			
2500	0																			

For all products covered by this PEP, weight (kg/km) of each product & number of active conductors* in the cable are mentioned in the technical datasheet, which can be obtained from the Nexans website.

*Number of active conductors = total number of conductors - neutral conductor (if applicable). If there is no neutral conductor in the cable, the number of active conductors = total number of conductors. The technical datasheet mentions if there is a neutral or not in a given cable.