

ENVIRONMENTAL AND HEALTH PRODUCT DECLARATION

*In accordance with standard NF EN 15804+A2
and its national supplement NF EN 15804+A2/CN*

INSUL-TUBE® /Onninen Onnline®

Range of 06 and 09 mm thickness and an inner diameter ranging from 06 to 160 mm, excluding complementary installation products.



Numéro d'enregistrement AFNOR : 20241040636

Disclaimer

The information contained in this declaration is provided under the responsibility of NMC sa (producer of the FDES) in accordance with NF EN 15804+A2 and the national supplement NF EN 15804+A2/CN.

Any use, in whole or in part, of the information provided in this document must be accompanied by a complete reference to the original FDES and its producer, who can provide a complete copy.

The CEN standard EN 15804+A2 and the national supplement NF EN 15804+A2/CN serve as rules for defining product categories (RCP).

NOTE The literal translation into French of “EPD (Environmental Product Declaration)” is “DEP” (Déclaration Environnementale de Produit). However, in France, the term FDES (Fiche de Déclaration Environnementale et Sanitaire) is commonly used, which combines both the Environmental Declaration and Health information for the product covered by this FDES. The FDES is therefore a “DEP” supplemented by health information.

Reading Guide

Reading example: $-9.0 \text{ E } -03 = -9.0 \times 10^{-3}$

The following display rules apply:

- When the inventory calculation result is zero, the value zero is displayed.
- Abbreviations used:
- N/A: Not Applicable
- FU: Functional Unit
- The units used are specified before each flow: kilogram “kg,” gram “g,” kilowatt-hour “kWh,” megajoule “MJ,” square meter “m²,” kelvin “K,” watt “W,” kilometer “km,” millimeter “mm.”

Precautions for using the FDES to compare products

FDES for construction products may not be comparable if they do not comply with standard NF EN 15804+A2.

Standard NF EN 15804+A2 defines in § 5.3 Comparability of EPDs* for construction products the conditions under which construction products can be compared, based on the information provided by the FDES:

“Therefore, a comparison of the environmental performance of construction products using EPD information must be based on the use of the products and their impact on the building, and must take into account the entire life cycle (all information modules).”

NOTE 1 Outside the framework of the environmental assessment of a building, FDES are not tools for comparing construction products and services.

NOTE 2 To assess the contribution of buildings to sustainable development, a comparison of environmental aspects and impacts must be undertaken in conjunction with the socio-economic aspects and impacts relating to the building.

NOTE 3 Reference values are necessary for the interpretation of a comparison.

General Informations

This is an individual FDES (French Environmental Declaration) covering the entire life cycle of the product from cradle to grave, issued by the manufacturer NMC France sas:

Z.I. de la Forêt - CS 10103

97, Route d'Anor

F - 59613 Fourmies Cedex

The product concerned is INSUL-TUBE® manufactured at the NMC Polska Sp.Zo.o factory located at Ul. Pyskowicka 15, 41807 Zabrze, Poland. This declaration covers the 06 mm thick range with an internal diameter ranging from 06 to 35 mm and the 09 mm thick range with an internal diameter ranging from 06 to 160 mm.

The EN 15804+A2 standard and its national supplement NF EN 15804+A2/CN serve as the rules for defining product categories (RCP).

Independent external verification carried out in accordance with the ISO 14025 (2010) environmental declaration program by:

La norme NF EN 15804+A2 et le complément national NF EN 15804+A2/CN du CEN sert de RCP a).
Independent verification of the declaration, in accordance with EN ISO 14025:2010 <input type="checkbox"/> interne <input checked="" type="checkbox"/> externe
(As applicable) External third-party verification: Mr. Ravel Pierre (pierre.ravel@cstb.fr) AFNOR-INIES registration number: 202410
Numéro d'enregistrement au programme conforme ISO 14025 : 20241040636
Registration number in the ISO 14025-compliant program: 15/02/2025
Date of update: N/A
Verification date: 16/01/2025
Period of validity: 5 ans
a) Rules for defining product categories b) Optional for communication between companies, mandatory for communication between a company and its customers (see EN ISO 14025:2010, 9.4).

Product description

1. Description of the functional unit

Considering the functions of this product, the functional unit can be described as follows: Providing insulation (R value of 0.16 to 0.24 m²K/W) for one linear meter of heating and sanitary piping with INSUL-TUBE® 160-09, for a reference service life of 50 years. (maximum weight 279 g/meter) The entire range listed in the title is covered by this FDES, excluding complementary installation products.

2. Description of the product, its use, and its packaging

INSUL-TUBE® is a foam insulation sleeve made of synthetic material (acrylonitrile butadiene rubber), a flexible rubber-based insulator for professional use, which provides insulation for all types of heating and sanitary pipes, as well as air conditioning and technical cooling systems. Low thermal conductivity, flexibility, and high resistance to water vapor diffusion are the key characteristics of INSUL-TUBE® insulation. It increases the energy efficiency and service life of the insulated installation, is optimized for different areas of application, and meets fire safety requirements. NMC thus offers a solution that is characterized by excellent dimensional stability, good value for money, and easy installation. INSUL-TUBE® is packaged and delivered in recycled cardboard packaging.

3. Distribution circuit

The primary purpose of this FDES is business-to-business communication. Since FDES are publicly available and therefore accessible to end consumers, they can also be used in business-to-consumer communication.

4. Description des principaux composants et/ou matériaux du produit

INSUL-TUBE® is a rubber foam with a density ranging from 45 to 65 kg/m³. INSUL-TUBE® 160-09 weighs 279 g/m, and 0.219 kg of cardboard is needed to package 1 meter of INSUL-TUBE® 160-09 insulation sleeve. The weight range for the product line is from 19.9 g/m for INSUL-TUBE® 06-06 to 279 g/m for INSUL-TUBE® 160-09. The reference used for the calculation is the item with the highest weight in the product line.

5. Other technical characteristics not included in the functional unit

Other technical characteristics, thermal conductivity, fire resistance, and operating temperatures are specified in the product documentation (<https://nmc-insulation.com/>).

6. Specify whether the product contains substances on the candidate list according to the REACH regulation.

In accordance with Article 33(1) of Regulation (EC) No. 1907/2006, suppliers of articles containing SVHCs published in ECHA's official candidate list in concentrations above 0.1% w/w must provide their customers with sufficient information to enable safe use of the article, including at least the name of the substance. L'ADCA (Azodicarbonamide) a été ajouté comme candidat à la liste des substances extrêmement préoccupantes en raison de ses éventuelles propriétés de sensibilisation respiratoire.

ADCA is a commonly used chemical foaming agent that decomposes during thermally induced foaming processes, which are typically used for the production of rubber-based foams. Residual levels of ADCA in these foams are typically very low, but not zero. We take particular care in our manufacturing processes to ensure that residual ADCA levels are as low as technically possible. However, despite our ongoing efforts, the product references listed in Appendix 1 show residual levels of ADCA slightly above the threshold of 0.1 m/m% (≤ 0.5 m/m%), for which mandatory

registration is required in the ECHA SCIP database. In Appendix 1, you will find the corresponding SCIP notification information in accordance with the REACH regulation.

We will continue our efforts to reduce ADCA residue levels and are monitoring the situation closely. We will inform our customers in due course if we have been successful in our efforts for the references concerned in Appendix 1.

MCCPs (Medium-Chain Chlorinated Paraffins) have been added as candidates to the list of substances of very high concern due to their potential persistent, bioaccumulative, and toxic properties.

MCCPs are commonly used as plasticizers and flame retardants in rubber foam products. Although we are looking for alternatives, we confirm that the product references listed in Appendix 1 contain MCCP levels above the threshold of 0.1 m/m%, for which mandatory registration is required in the ECHA SCIP database. In Appendix 1, you will find the corresponding SCIP notification information in accordance with the REACH regulation. We will continue our efforts to replace MCCP in our formulations and are monitoring the situation closely. We will inform our customers in due course if we have been successful in our efforts for the references concerned in Annex 1.

Furthermore, based on the current information provided by our upstream suppliers, we hereby declare that the references provided do not contain any substances listed in Annex XIV, i.e., substances subject to authorization, and that we comply with the restrictions set out in Annex XVII of the REACH Regulation.

7. Preuves d'aptitude à l'usage

See NF DTU 45.2 - April 14, 2018 (Thermal insulation of circuits, devices, and accessories from -80°C to +650°C). Note: complementary implementation products were not taken into account in this study.

Description of the reference service life

Parameter	Value / Units
Reference service life	50 years
Declared product properties	Used for insulating heating and sanitary pipes inside buildings.
Presumed quality of work	The quality of the work is presumed to comply with current best practice recommendations and specific instructions for the product as described in the installation instructions: Insul_Montageanleitung_Brochure_DINA4_EN_2020-12.p.
Indoor environment	Conditions corresponding to typical residential or tertiary use in mainland France
outdoor environment	Not Concerned
Conditions utilisation	Not Concerned
Maintenance service scenario	No maintenance required

Information on biogenic carbon content

Biogenic carbon content	Unit: 1 m of INSUL-TUBE® 160-09
Biogenic carbon content of the product (at the factory gate)	0 Kg C
Biogenic carbon content of associated packaging (ex-factory)	0,086 Kg C

Life cycle stages

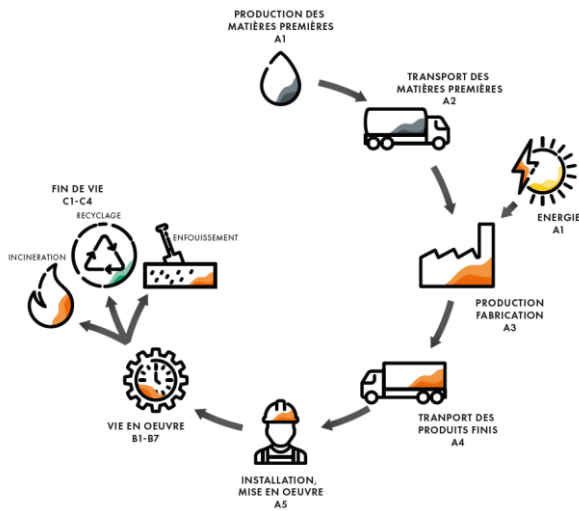


Figure 1 Life cycle diagram

The most impactful process in the INSUL-TUBE® life cycle is module A1, raw material production. When analyzing the entire life cycle (excluding module D) and looking at the impact on global warming, we see that more than 86% comes from the raw material production module.

The stages taken into account in this life cycle assessment are shown in the table below.

DESCRIPTION OF SYSTEM BOUNDARIES (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)														
PRODUCTI ON STAGE	CONSTRUCTION PROCESS STAGE		USE STAGE							END-OF-LIFE STAGE				BENEFITS AND COSTS BEYOND THE SYSTEM BOUNDARIE S
	Transport	Construction and installation process	Utilisation	Maintenance	Répair	Remplacement	Réhabilitation	Energy use during the use phase	Energy use during the use phase	Demolition/deconstruction	Transport	Waste treatment	Elimination	
A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Production stage, A1- A3

This stage takes into account the extraction, production, and transport of raw materials, the production of energy consumed on site, the manufacture of INSUL-TUBE®, their packaging and storage prior to shipment and delivery.

The treatment of waste leaving the factory is a combination of recycling and incineration.

The aggregation of modules A1, A2, and A3 is a possibility provided for by standard EN 15804+A2.

This rule is applied to this FDES.

- A1 Raw material supply
This module takes into account the supply and processing of raw materials and the energy produced upstream of the manufacturing process.
- A2 Transport to the manufacturing site
For this module, the modeling takes into account both road and sea transport. Vehicles used in the modeling: Euro 0-6 diesel-powered goods trucks with a loading capacity of 27 tons. The loading rate of trucks for the raw materials was estimated at 50%. For transport by ship, the model used is a container ship with a load capacity of 5,000 to 200,000 dwt, ocean-going.
- A3 Production
The manufacture of INSUL-TUBE® involves several stages. The first consists of mixing the various ingredients in a Banbury mixer. A compact rubber strip is then recovered from the

mixer and fed back into another mixer. A new strip emerges, which is cooled, cut into sheets, and stored. The next part of the process involves passing the mixture through an extruder, where the rubber sheets are mixed with other ingredients. The mixture is fed into a mixing screw inside a heated barrel and emerges through dies in the form of tubes. The INSUL-TUBE® tubes are then sent to an oven where they are cured to achieve the correct density and dimensions. After passing through a cooling bath, they are cut to length. They then move on to the packaging stage, where they are stored in cardboard boxes.

Construction Stage, A4-A5

- A4 transport
This stage models the transport of INSUL-TUBE® from the production site to the construction sites, in most cases via an intermediary.

Parameter	Value
Type of fuel and consumption of the vehicle or type of vehicle used for transport, e.g., long-distance truck, boat, etc.	Euro 0-6 diesel-powered goods truck with a load capacity of 27 tons. Diesel consumption of 38 liters per 100 km.
Distance to the construction site	1598 km
Capacity utilization (including empty returns)	20% of max capacity
Bulk density of transported products	From 45 to 65 kg/m ³
Volume capacity utilization coefficient	< 1

- A5 Installation
INSUL-TUBE® is installed by hand and does not require any special tools other than a knife. The cardboard packaging brought to the construction site is expected to be recycled. Auxiliary inputs were not included in the life cycle assessment.

Parameter	Value
Auxiliary inputs for installation (specified by material)	Glue and/or adhesive tape may be used, but must be applied in accordance with the manufacturer's recommendations.
Water usage	Not concerned
Use of other resources	Not concerned
Quantitative description of the type of energy (regional mix) and consumption during the installation process	Not concerned
Waste produced at the construction site prior to treatment of waste generated by product installation (specified by type)	The products can be placed end to end and any remaining pieces can be reused for other ducts. As a result, the loss of unusable material on site is very low and the criterion of 2% loss has been adopted as recommended in standard EN 16783, which is equivalent to 0.0056 kg per meter of INSUL-TUBE® installed.

Materials (specified by type) produced by waste treatment at the construction site, e.g., collection for recycling, energy recovery, disposal (specified by route)	Construction waste is considered to be landfilled, while cardboard packaging is considered to be recycled. Based on Eurostat statistics on paper and cardboard recycling in France, 82.2% of paper and cardboard is recycled in France (2020, latest data available). The model therefore assumes a packaging waste rate of 17.8% during installation, which is considered to be sent to landfill. This represents 0.180 kg for recycling and 0.039 kg of cardboard sent to landfill per meter of INSUL-TUBE® installed.
Direct emissions to ambient air, soil, and water	Not concerned

Implementation phase, B1-B7

Once installed, INSUL-TUBE® requires no maintenance or repairs. It will be dismantled at the end of the building's life or when the heating or sanitary system is replaced. Furthermore, the product undergoes no modification or deterioration throughout its service life. For these reasons, there is no impact on modules B1 to B7.

End-of-life stage, C1-C4

- C1 Deconstruction, demolition
As with product installation, dismantling is done manually and does not require any special equipment other than a knife. In addition, dismantling is usually done at the same time as replacing the heating or sanitary system. As a result, there is no impact associated with this module.
- C2 Transport
The choice of transport for the end-of-life stage was by truck with a Euro 0-6 diesel engine and a load capacity of 27 tons. Diesel consumption was 38 liters per 100 km. The average distance between the dismantling sites and the treatment centers (incinerator, recycling center, and landfill) was estimated at 50 km.
- C3 Treatment of waste for reuse, recovery, and/or recycling and disposal
The end-of-life scenario for INSUL-TUBE® was modeled based on 100% landfill disposal, as prescribed in Annex L of the national supplement to standard NF EN 15804 A2.

Parameter	Value
Collection process	Manual disassembly
Recovery system specified by type	0.0 kg of foam destined for recycling 0.0 kg of foam destined for energy recovery
Specified disposal by type	0.279 kg intended for final disposal
Assumptions for scenario development	Transportation over a distance of 50 km

Potential for recycling/reuse/recovery, D

Outside the boundaries of the system, as the product is disposed of in a landfill, there are no benefits or costs beyond the boundaries of the system.

Information for calculating life cycle assessment

PCR used	NF EN 15804+A2 and its national supplement NF EN 15804/CN, the method chosen is that of the EC-JRC characterization factors (EF 3.1).
System boundary	The study covers the entire life cycle as defined by standard NF EN 15804+A2.
Allocations	All inputs and outputs were accounted for on a mass basis.
Cutting rules	Workshop cleaning, the administrative department, employee transportation, manufacturing, and heavy maintenance of production equipment have been omitted from the system boundaries in accordance with standard NF EN 15804/CN.
Geographic and temporal representativeness of primary data	<p>The primary data collected relating to the manufacture of the product under study is representative of production in 2023 for the NMC Poland site. The software used for the LCA is Sphera LCA for expert / Service Pack 2023002000. The energy mix for modules A1-A3 is the Ecoinvent 3.10 residual grid mix for Poland with a GHG impact of 1.094 kg CO₂e/kWh. The GHG impact value for the gas used in module A1-A3 is 0.250 kg CO₂e/kWh, and the PL: Thermal energy from natural gas Sphera dataset was used.</p> <p>A weighted average based on the total production of all references was calculated for the LCA, using 1 kg of INSUL-TUBE® as the unit.</p>
Variability of results	<p>The results presented in this study are those of INSUL-TUBE® 160-09, covering the entire range of 06 mm and 09 mm thicknesses.</p> <p>Climate Change – Total: -92.8/+0%</p> <p>Total use of non-renewable primary energy resources (excluding non-renewable primary energy resources used as raw materials): -92.8/+0%</p> <p>Non-hazardous waste disposed of: -92.8/+0%</p>

Life cycle assessment results

Below are tables summarizing the LCA results for 1 linear meter of INSUL-TUBE® 160-09 insulating sleeve. Due to rounding, the totals may not correspond to the sum of the rounded figures.

MND: Undeclared Module

For energy indicators used as raw materials: a negative value corresponds to a change in use from raw materials to fuels (in the case of incineration, for example). Application of Annex I of NF EN 15804+A2/CN.

INDICATEURS d'IMPACTS ENVIRONNEMENTAUX DE REFERENCE															
Impacts Environnementaux	Etape de production	Etape de construction		Etape d'utilisation							Etape de Fin de vie				Bénéfices et charges au-delà des frontières du système
	A1 /A2 / A3	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Réparation	B4 Remplacement	B5 Réhabilitation	B6 Utilisation de l'énergie	B7 Utilisation de l'eau	C1 Déconstruction	C2 Transport	C3 Traitement des déchets	C4 Décharge	
Changement climatique - total <i>kg CO2 equiv/UF ou UD</i>	1,23E+00	3,78E-02	4,15E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,23E-03	0,00E+00	8,26E-03	0,00E+00
Changement climatique – combustibles fossiles <i>kg CO2 equiv/UF ou U</i>	1,23E+00	3,71E-02	2,66E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,19E-03	0,00E+00	8,20E-03	0,00E+00
Changement climatique - biogénique <i>kg CO2 equiv/UF ou UD</i>	5,95E-03	1,02E-04	1,48E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,14E-06	0,00E+00	2,51E-05	0,00E+00
Changement climatique – occupation des sols et transformation de l'occupation des sols <i>kg CO2 equiv/UF ou UD</i>	9,60E-04	5,96E-04	3,35E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,58E-05	0,00E+00	3,02E-05	0,00E+00
Appauvrissement de la couche d'ozone <i>kg de CFC 11 equiv /UF ou UD</i>	2,63E-10	5,22E-15	5,26E-12	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,14E-16	0,00E+00	2,71E-14	0,00E+00
Acidification <i>mole de H+ equiv / UF ou UD</i>	8,01E-03	4,64E-05	1,68E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,80E-06	0,00E+00	4,91E-05	0,00E+00
Eutrophisation aquatique, eaux douces <i>kg P equiv / UF ou UD</i>	1,07E-05	1,51E-07	4,42E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,11E-09	0,00E+00	4,71E-06	0,00E+00
Eutrophisation aquatique marine <i>kg N equiv / UF ou UD</i>	9,33E-04	1,69E-05	2,27E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,03E-06	0,00E+00	1,06E-05	0,00E+00
Eutrophisation terrestre <i>mole N equiv / UF ou UD</i>	9,41E-03	1,98E-04	2,16E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-05	0,00E+00	1,16E-04	0,00E+00
Formation d'ozone photochimique <i>kg de NMCOV equiv/UF ou UD</i>	3,19E-03	5,32E-05	7,83E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,84E-06	0,00E+00	3,38E-05	0,00E+00
Epuisement des ressources abiotiques (minéraux & métaux) <i>kg Sb equiv/UF ou UD</i>	8,25E-03	3,09E-09	1,65E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,86E-10	0,00E+00	5,45E-10	0,00E+00
Epuisement des ressources abiotiques (combustibles fossiles) <i>MJ/UF ou UD</i>	1,87E+01	4,67E-01	4,04E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,81E-02	0,00E+00	1,39E-01	0,00E+00
Besoin en eau <i>m3 de privation equiv dans le monde / UF ou UD</i>	8,40E-02	5,49E-04	1,80E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,30E-05	0,00E+00	1,06E-03	0,00E+00

INDICATEURS d'IMPACTS ENVIRONNEMENTAUX ADDITIONNELS															
Impacts Environnementaux	Etape de production	Etape de construction		Etape d'utilisation							Etape de Fin de vie				Bénéfices et charges au-delà des frontières du système
	A1 /A2 / A3	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Réparation	B4 Remplacement	B5 Réhabilitation	B6 Utilisation de l'énergie	B7 Utilisation de l'eau	C1 Déconstruction	C2 Transport	C3 Traitement des déchets	C4 Décharge	
Emissions de particules fines <i>Indice de maladies / UF ou UD</i>	4,89E-07	4,79E-10	9,85E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,78E-11	0,00E+00	5,08E-10	0,00E+00
Rayonnements ionisants (santé humaine) <i>kBq de U235 equiv / UF ou UD</i>	3,97E-02	1,23E-04	8,33E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,42E-06	0,00E+00	2,68E-04	0,00E+00
Ecotoxicité (eaux douces) <i>CTUe / UF ou UD</i>	1,12E+01	3,47E-01	2,49E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,09E-02	0,00E+00	3,00E-01	0,00E+00
Toxicité humaine, effets cancérigènes <i>CTUh / UF ou UD</i>	2,59E-10	7,00E-12	5,69E-12	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,21E-13	0,00E+00	4,45E-12	0,00E+00
Toxicité humaine, effets non cancérigènes <i>CTUh / UF ou UD</i>	1,21E-08	3,14E-10	2,83E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,89E-11	0,00E+00	9,32E-11	0,00E+00
Impacts liés à l'occupation des sols / Qualité des sols <i>Sans dimension / UF ou UD</i>	2,65E+00	2,30E-01	5,97E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,38E-02	0,00E+00	2,35E-02	0,00E+00

UTILISATION DES RESSOURCES															
Impacts Environnementaux	Etape de production	Etape de construction		Etape d'utilisation							Etape de Fin de vie				Bénéfices et charges au-delà des frontières du système
	A1 /A2 / A3	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Réparation	B4 Remplacement	B5 Réhabilitation	B6 Utilisation de l'énergie	B7 Utilisation de l'eau	C1 Déconstruction	C2 Transport	C3 Traitement des déchets	C4 Décharge	
Utilisation de l'énergie primaire renouvelable, à l'exclusion des ressources d'énergie primaire renouvelables utilisées comme matières premières - <i>MJ/UF ou UD</i>	2,99E+00	4,02E-02	6,27E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,42E-03	0,00E+00	2,09E-02	0,00E+00
Utilisation des ressources d'énergie primaire renouvelables en tant que matières premières - <i>MJ/UF ou UD</i>	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Utilisation totale des ressources d'énergie primaire renouvelables (énergie primaire et ressources d'énergie primaire utilisées comme matières premières) - <i>MJ/UF ou UD</i>	2,99E+00	4,02E-02	6,27E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,42E-03	0,00E+00	2,09E-02	0,00E+00
Utilisation de l'énergie primaire non renouvelable, à l'exclusion des ressources d'énergie primaire non renouvelables utilisées comme matières premières - <i>MJ/UF ou UD</i>	1,51E+01	4,67E-01	3,31E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,81E-02	0,00E+00	1,39E-01	0,00E+00
Utilisation des ressources d'énergie primaire non renouvelables en tant que matières premières - <i>MJ/UF ou UD</i>	3,62E+00	0,00E+00	7,23E-02	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	0,00E+00	0,00E+00	0,00E+00
Utilisation totale des ressources d'énergie primaire non renouvelables (énergie primaire et ressources d'énergie primaire utilisées comme matières premières) - <i>MJ/UF ou UD</i>	1,87E+01	4,67E-01	4,04E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,81E-02	0,00E+00	1,39E-01	0,00E+00
Utilisation de matière secondaire - <i>kg/UF ou UD</i>	9,38E-02	0,00E+00	1,88E-03	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	0,00E+00	0,00E+00	0,00E+00
Utilisation de combustibles secondaires renouvelables - <i>MJ/UF ou UD</i>	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Utilisation de combustibles secondaires non renouvelables - <i>MJ/UF ou UD</i>	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Utilisation nette d'eau douce - <i>m3/UF ou UD</i>	3,89E-03	4,48E-05	8,19E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,70E-06	0,00E+00	3,17E-05	0,00E+00

CATEGORIES DE DECHETS															
Impacts Environnementaux	Etape de production	Etape de construction		Etape d' utilisation							Etape de Fin de vie				Bénéfices et charges au-delà des frontières du système
	A1 /A2 / A3	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Réparation	B4 Remplacement	B5 Réhabilitation	B6 Utilisation de l'énergie	B7 Utilisation de l'eau	C1 Déconstruction	C2 Transport	C3 Traitement des déchets	C4 Décharge	
Déchets dangereux éliminés - kg/UF ou UD	6,88E-03	1,79E-11	1,38E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,08E-12	0,00E+00	3,42E-11	0,00E+00
Déchets non dangereux éliminés - kg/UF ou UD	1,64E-01	7,63E-05	2,09E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,59E-06	0,00E+00	2,78E-01	0,00E+00
Déchets radioactifs éliminés - kg/UF ou UD	3,10E-04	8,51E-07	6,45E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,12E-08	0,00E+00	1,95E-06	0,00E+00

FLUX SORTANTS															
Impacts Environnementaux	Etape de production	Etape de construction		Etape d' utilisation							Etape de Fin de vie				Bénéfices et charges au-delà des frontières du système
	A1 /A2 / A3	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Réparation	B4 Remplacement	B5 Réhabilitation	B6 Utilisation de l'énergie	B7 Utilisation de l'eau	C1 Déconstruction	C2 Transport	C3 Traitement des déchets	C4 Décharge	
Composants destiné à la réutilisation - kg/UF ou UD	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Matériaux destinés au recyclage - kg/UF ou UD	4,70E-03	0,00E+00	7,88E-02	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	0,00E+00	0,00E+00	0,00E+00
Matériaux destinés à la récupération d'énergie - kg/UF ou UD	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Energie Electrique fournie à l'extérieur - MJ/UF ou UD	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Energie Vapeur fournie à l'extérieur - MJ/UF ou UD	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Energie gaz et process fournie à l'extérieur - MJ/UF ou UD	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

IMPACTS ENVIRONNEMENTAUX						
Agrégation des différents modules pour réaliser un « Total d'étape » ou « Total Cycle de vie »						
Impacts/Flux	Etape de production	Etape de construction	Etape d'utilisation	Etape de fin de vie	Total cycle de vie	Etape Bénéfices et charges au-delà des frontières du système
Indicateurs d'impacts environnementaux de référence						
Changement climatique - total <i>kg CO2 equiv/UF ou UD</i>	1,23E+00	7,93E-02	0,00E+00	1,05E-02	1,32E+00	0,00E+00
Changement climatique – combustibles fossiles <i>kg CO2 equiv/UF ou U</i>	1,23E+00	6,38E-02	0,00E+00	1,04E-02	1,30E+00	0,00E+00
Changement climatique - biogénique <i>kg CO2 equiv/UF ou UD</i>	5,95E-03	1,49E-02	0,00E+00	3,12E-05	2,09E-02	0,00E+00
Changement climatique – occupation des sols et transformation de l'occupation des sols <i>kg CO2 equiv/UF ou UD</i>	9,60E-04	6,30E-04	0,00E+00	6,61E-05	1,66E-03	0,00E+00
Appauvrissement de la couche d'ozone <i>kg de CFC 11 equiv /UF ou UD</i>	2,63E-10	5,27E-12	0,00E+00	2,74E-14	2,68E-10	0,00E+00
Acidification <i>mole de H+ equiv / UF ou UD</i>	8,01E-03	2,14E-04	0,00E+00	5,19E-05	8,27E-03	0,00E+00
Eutrophisation aquatique, eaux douces <i>kg P equiv / UF ou UD</i>	1,07E-05	5,93E-07	0,00E+00	4,71E-06	1,60E-05	0,00E+00
Eutrophisation aquatique marine <i>kg N equiv / UF ou UD</i>	9,33E-04	3,97E-05	0,00E+00	1,16E-05	9,84E-04	0,00E+00
Eutrophisation terrestre <i>mole N equiv / UF ou UD</i>	9,41E-03	4,14E-04	0,00E+00	1,28E-04	9,96E-03	0,00E+00
Formation d'ozone photochimique <i>kg de NMCOV equiv/UF ou UD</i>	3,19E-03	1,31E-04	0,00E+00	3,67E-05	3,36E-03	0,00E+00
Epuisement des ressources abiotiques (minéraux & métaux) <i>kg Sb equiv/UF ou UD</i>	8,25E-03	1,65E-04	0,00E+00	7,31E-10	8,42E-03	0,00E+00
Epuisement des ressources abiotiques (combustibles fossiles) <i>MJ/UF ou UD</i>	1,87E+01	8,71E-01	0,00E+00	1,67E-01	1,98E+01	0,00E+00
Besoin en eau <i>m3 de privation equiv dans le monde / UF ou UD</i>	8,40E-02	2,35E-03	0,00E+00	1,09E-03	8,75E-02	0,00E+00
Indicateurs d'impacts environnementaux additionnels						
Impacts/Flux	Etape de production	Etape de construction	Etape d'utilisation	Etape de fin de vie	Total cycle de vie	Etape Bénéfices et charges au-delà des frontières du système
Emissions de particules fines <i>Indice de maladies / UF ou UD</i>	4,89E-07	1,03E-08	0,00E+00	5,36E-10	5,00E-07	0,00E+00
Rayonnements ionisants (santé humaine) <i>kBq de U235 equiv / UF ou UD</i>	3,97E-02	9,56E-04	0,00E+00	2,75E-04	4,09E-02	0,00E+00
Ecotoxicité (eaux douces) <i>CTUe / UF ou UD</i>	1,12E+01	5,96E-01	0,00E+00	3,21E-01	1,21E+01	0,00E+00
Toxicité humaine, effets cancérigènes <i>CTUh / UF ou UD</i>	2,59E-10	1,27E-11	0,00E+00	4,87E-12	2,76E-10	0,00E+00
Toxicité humaine, effets non cancérigènes <i>CTUh / UF ou UD</i>	1,21E-08	5,97E-10	0,00E+00	1,12E-10	1,28E-08	0,00E+00
Impacts liés à l'occupation des sols / Qualité des sols <i>Sans dimension / UF ou UD</i>	2,65E+00	2,90E-01	0,00E+00	3,73E-02	2,98E+00	0,00E+00

IMPACTS ENVIRONNEMENTAUX						
Agrégation des différents modules pour réaliser un « Total d'étape » ou « Total Cycle de vie »						
Impacts/Flux	Etape de production	Etape de construction	Etape d'utilisation	Etape de fin de vie	Total cycle de vie	Etape Bénéfices et charges au-delà des frontières du système
Consommation des ressources						
Utilisation de l'énergie primaire renouvelable, à l'exclusion des ressources d'énergie primaire renouvelables utilisées	2,99E+00	1,03E-01	0,00E+00	2,34E-02	3,11E+00	0,00E+00
Utilisation des ressources d'énergie primaire renouvelables en tant que matières premières - MJ/UF ou UD	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Utilisation totale des ressources d'énergie primaire renouvelables (énergie primaire et ressources d'énergie primaire utilisées comme matières premières) - MJ/UF ou UD	2,99E+00	1,03E-01	0,00E+00	2,34E-02	3,11E+00	0,00E+00
Utilisation de l'énergie primaire non renouvelable, à l'exclusion des ressources d'énergie primaire non renouvelables utilisées comme matières premières - MJ/UF ou UD	1,51E+01	7,99E-01	0,00E+00	1,67E-01	1,61E+01	0,00E+00
Utilisation des ressources d'énergie primaire non renouvelables en tant que matières premières - MJ/UF ou UD	3,62E+00	7,23E-02	0,00E+00	0,00E+00	3,69E+00	0,00E+00
Utilisation totale des ressources d'énergie primaire non renouvelables (énergie primaire et ressources d'énergie primaire utilisées comme matières premières) - MJ/UF ou UD	1,87E+01	8,71E-01	0,00E+00	1,67E-01	1,98E+01	0,00E+00
Utilisation de matière secondaire - kg/UF ou UD	9,38E-02	1,88E-03	0,00E+00	0,00E+00	9,57E-02	0,00E+00
Utilisation de combustibles secondaires renouvelables - MJ/UF ou UD	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Utilisation de combustibles secondaires non renouvelables - MJ/UF ou UD	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Utilisation nette d'eau douce - m3/UF ou UD	3,89E-03	1,27E-04	0,00E+00	3,44E-05	4,05E-03	0,00E+00
IMPACTS ENVIRONNEMENTAUX						
Agrégation des différents modules pour réaliser un « Total d'étape » ou « Total Cycle de vie »						
Impacts/Flux	Etape de production	Etape de construction	Etape d'utilisation	Etape de fin de vie	Total cycle de vie	Etape Bénéfices et charges au-delà des frontières du système
Catégories de déchets						
Déchets dangereux éliminés - kg/UF ou UD	6,88E-03	1,38E-04	0,00E+00	3,53E-11	7,02E-03	0,00E+00
Déchets non dangereux éliminés - kg/UF ou UD	1,64E-01	2,10E-02	0,00E+00	2,78E-01	4,63E-01	0,00E+00
Déchets radioactifs éliminés - kg/UF ou UD	3,10E-04	7,31E-06	0,00E+00	2,01E-06	3,19E-04	0,00E+00
Flux sortants						
Composants destiné à la réutilisation - kg/UF ou UD	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Matériaux destinés au recyclage - kg/UF ou UD	4,70E-03	7,88E-02	0,00E+00	0,00E+00	8,35E-02	0,00E+00
Matériaux destinés à la récupération d'énergie - kg/UF ou UD	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Energie Electrique fournie à l'extérieur - MJ/UF ou UD	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Energie Vapeur fournie à l'extérieur - MJ/UF ou UD	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Energie gaz et process fournie à l'extérieur - MJ/UF ou UD	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional information on the release of hazardous substances into indoor air, soil, and water during the use phase

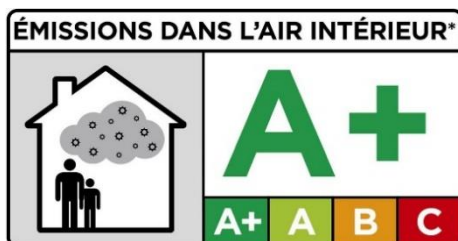
Indoor Air

VOCs and formaldehyde

The CEFEP (European group of FEF (Flexible Elastomeric Foam) manufacturers) asked the Eurofins institute to carry out tests and assessments in accordance with EN 16516; AgBB, ISO 16000-3; ISO 16000-6; ISO 16000-9, ISO 16000-11 for a wide range of typical FEF foams, including an NMC foam. The conclusion is that the emission of substances from FEF foams is significantly lower than the limit values defined by the requirements of French regulations DEVPO908633A of April 30, 2009, and DEVPO910046A of May 28, 2009, the Belgian Royal Decree on emissions inside buildings, and the AgBB Schema in Germany.

The test was carried out by the Eurofins Product Testing A/S laboratory (Test report no.: 392-2013-GSH-CEFEP_01).

VOC emission classification: The tested product has been awarded an A+ emission rating. This recommendation is based on French regulations dated March 23, 2011 (decree DEVL1101903D) and April 19, 2011 (order DEVL1104875A).



Resistance to fungal growth:

INSUL® foam manufactured by NMC has been tested in accordance with test method EN ISO 846 A & C, resulting in a classification of 1 for fungi and bacteria. The product has been declared compliant for use in ventilation systems in accordance with the requirements of Deutsche VDI 6022, Part 1 (04/2006). The test was carried out by the laboratory Ostthüringische Materialprüfgesellschaft für Textil und Kunststoffe mbH - Breitscheidstraße 97 - 07407 Rudolstadt (Test report no.: 2245B-0005).

Soil and water

Not relevant for the product concerned, as it does not come into contact with water intended for human consumption, runoff water, infiltration water, groundwater, or surface water.

Contribution of the product to indoor quality of life

Product features contributing to the creation of comfortable hygrothermal conditions in buildings

The thermal conductivity of the product is ≤ 0.038 W/mK at 40°C. The test was carried out by the FIW München laboratory, test report no. G2-18-1541-03.

Product features contributing to the creation of acoustic comfort conditions in buildings

Not applicable, as INSUL-TUBE® is generally only used in technical rooms and/or ducts.

Product features contributing to the creation of comfortable visual conditions in buildings

Not applicable, as INSUL-TUBE® is generally only used in technical rooms and/or ducts.

Product features contributing to the creation of pleasant olfactory conditions in buildings

Not applicable, as INSUL-TUBE® is generally only used in technical rooms and/or ducts.

Positive environmental contribution

INSUL-TUBE® contributes to the economic and ecological efficiency of heating and sanitary installations. By preventing heat loss and therefore energy loss from the installations it insulates, INSUL-TUBE® can help optimize the ecological performance of buildings. In addition to its NMC-guaranteed efficiency, it offers excellent dimensional stability, good value for money, and easy installation.

Annexe

Gammes de produits	Numéro de référence SCIP	ADCA	MCCP
INSUL-TUBE®	65cb3e24-9887-4ab8-a39b-85acad9a4e57	Yes	Yes

Annex 1