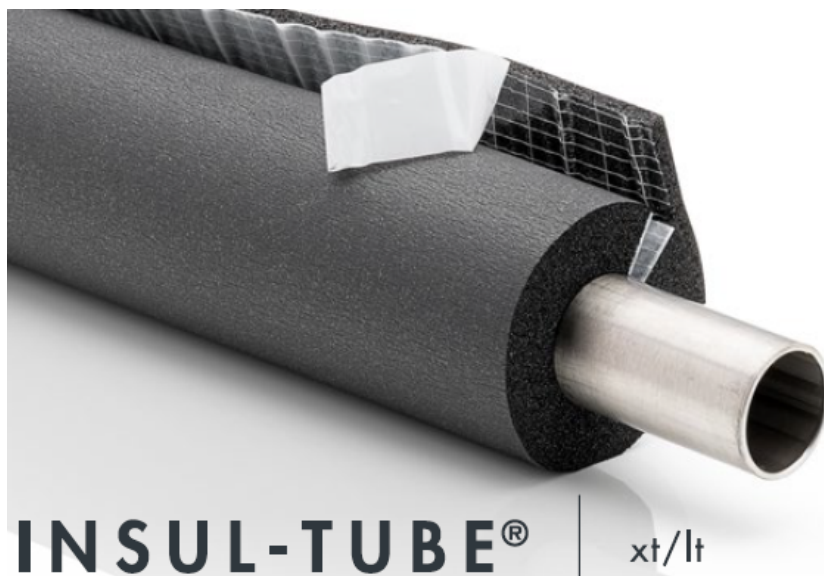


Individual Environmental and Health Product Declaration Sheet for the Product Range

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

INSUL-TUBE® XT LT/Onninen Onnline® XT-LT

Range from 09 to 25 mm in thickness and with an inner diameter from 12 to 89 mm



Numéro d'enregistrement AFNOR : 20241040633

Date de publication : 16/01/2025

Version 1.1



Warning

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 its national supplement NF EN 15804+A2/CN.

Any use, whether in full or in part, of the information provided in this document must at a minimum include the complete reference to the original FDES as well as its producer, who can provide a complete copy upon request.

The EN 15804+A2 standard from CEN, together with the national supplement NF EN 15804+A2/CN, serves as the basis for the product category rules (PCR).

NOTE: The literal French translation 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. This term encompasses both the Environmental Declaration and the health information for the product covered by this FDES. Thus, an FDES is essentially a "DEP" supplemented by health information.

Guide to Reading

Example of notation: $-9.0 \text{ E } -03 = -9.0 \times 10^{-3}$

The following display rules apply:

When the calculated inventory result is zero, the value zero is displayed.

Abbreviation used:

⇒ N/A: Not Applicable

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Precaution for Using the FDES When Comparing Products

Environmental and Health Declarations (FDES) for construction products may not be comparable if they do not comply with the NF EN 15804+A2 standard.

The NF EN 15804+A2 standard, as defined in Section 5.3 "Comparability of EPD* for construction products," specifies the conditions under which construction products can be compared, based on the information provided by the FDES:

"Therefore, any comparison of the environmental performance of construction products using EPD information must be based on the functional use of the products and their impacts on the building, and must account for the entire life cycle (all information modules)."

Note 1: Outside the framework of a building's environmental assessment, FDES are not tools intended to compare construction products and services.

Note 2: When evaluating a building's contribution to sustainable development, a comparison of environmental aspects and impacts must be undertaken together with the socioeconomic aspects and impacts related to the building.

Note 3: Reference values are necessary for interpreting a comparison.

General Information

This is an individual FDES covering cradle-to-grave assessment from 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® XT LT, manufactured and processed at the NMC Polska Sp.Zo.o plant located at Ul. Pyskowicka 15, 41807 Zabrze, Poland. This declaration covers all references in the INSUL-TUBE® XT LT range, with thicknesses from 09 to 25 mm and internal diameters from 12 to 89 mm.

Standard EN 15804+A2 and its national supplement NF EN 15804+A2/CN are used as rules for defining product category rules (PCR).

This information is available at the following address:

Site Web : www.inies.fr



Description of the Functional Unit and the Product

Description of the Functional Unit

Considering the functions of this product, the functional unit can be described as follows:
To provide insulation (R from 0.24 to 0.66 m²K/W) for one linear meter of piping in heating and sanitary installations using INSUL-TUBE® XT LT 89-25, for a reference service life of 50 years.
(Maximum weight 447.8 g/meter, average weight used for calculations) (excluding complementary installation products).

Product description, its use, and packaging:

INSUL-TUBE® XT LT is a synthetic foam insulation sleeve (acrylonitrile butadiene rubber) equipped with a self-adhesive closure and a covering tape with rubber foam adhesive. It is a flexible rubber-based insulating material intended for professional use, ensuring insulation for all types of heating and sanitary pipes as well as air conditioning and technical cooling systems. Key features of INSUL-TUBE® XT LT insulators include low thermal conductivity, flexibility, and high resistance to water vapor diffusion. This product increases energy efficiency and the lifespan of the insulated installation, is optimized for various application areas, and meets fire performance requirements. NMC thus offers a solution characterized by excellent dimensional stability, a good quality-price ratio, and easy installation. INSUL-TUBE® XT LT is packed and delivered in recycled cardboard packaging.

Distribution circuit:

The main objective of this FDES is business-to-business communication. Since FDES documents are publicly accessible and therefore available to end consumers, they can also be used for business-to-consumer communication.

Description of the main components and/or materials of the product:

INSUL-TUBE® XT LT is a rubber foam with a self-adhesive closure, with a density ranging from 45 to 65 kg/m³. The weight of INSUL-TUBE® XT LT 89-25 is 477.8 g/m, and 0.164 kg of cardboard is required to package one meter of INSUL-TUBE® XT LT 89-25 insulation sleeve. The weight range of the product line goes from 44.8 g/m for INSUL-TUBE® XT LT 09-12 up to 477.8 g/m for INSUL-TUBE® XT LT 89-25. The weighted average weight of the range is used for calculations.

Other technical characteristics not included in the functional unit:

Other technical characteristics, such as thermal conductivity, fire resistance, and service temperatures, are specified in the product documentation (<https://nmc-insulation.com/>).
Specify if the product contains substances from the candidate list according to the REACH regulation: In accordance with Article 33, paragraph 1, of Regulation (EC) No. 1907/2006, suppliers of articles containing SVHCs published in the official candidate list of ECHA at concentrations greater than 0.1% by weight must provide their customers with sufficient information to ensure the safe use of the article, including at least the name of the substance.
ADCA (Azodicarbonamide) has been added as a candidate to the list of substances of very high concern due to its potential respiratory sensitizing properties. ADCA is a commonly used chemical blowing agent that decomposes during thermally induced foaming processes, which are typically used in the production of rubber-based foams. The residual levels of ADCA in these foams are typically very low, but not zero. We pay particular attention in our manufacturing processes to ensure that residual ADCA levels are as low as technically possible. However, the product references listed in Annex 1 show, despite our ongoing efforts, residual ADCA levels slightly above the 0.1 m/m% threshold (≤ 0.5 m/m%), for which mandatory registration is required in the ECHA SCIP database. In Annex 1, you will find, in accordance with the REACH regulation, the corresponding SCIP notification information. We will continue our efforts to reduce residual ADCA levels and closely monitor the situation. We will

inform our customers in due course if we succeed in our efforts for the references concerned in Annex 1.

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

Furthermore, based on the latest information provided by our upstream suppliers, we hereby declare that the supplied references do not contain any substances listed in Annex XIV, meaning substances subject to authorization, and that we comply with the restrictions specified in Annex XVII of the REACH regulation.

Evidence of fitness for use

See NF DTU 45.2 - April 14, 2018 (Thermal insulation of circuits, equipment, and accessories from –80°C to +650°C). Note: The complementary installation products were not considered in this study.

Description of the reference service life

Parameter	Value/ Unit
Reference service life	50 Years
Declared Product Properties	Use for the insulation of heating and sanitary pipes inside buildings.
Presumed quality of work	The quality of the work is assumed to comply with best practice guidelines currently in effect and with the specific instructions for the product as described in the installation manual: Insul_Montageanleitung_Brochure_DINA4_FR_2020-12.pdf.
Indoor environment	Regular indoor use
Outdoor environment	Not applicable
Conditions of use	Not applicable
Maintenance scenario	No maintenance required

Information on biogenic carbon content

Biogenic carbon content	Unit: 1m of INSUL-TUBE® 89-25
Biogenic carbon content of the product (at the factory exit)	0 Kg C
Biogenic carbon content of the associated packaging (at the factory exit)	0,079 Kg C

Life cycle stages

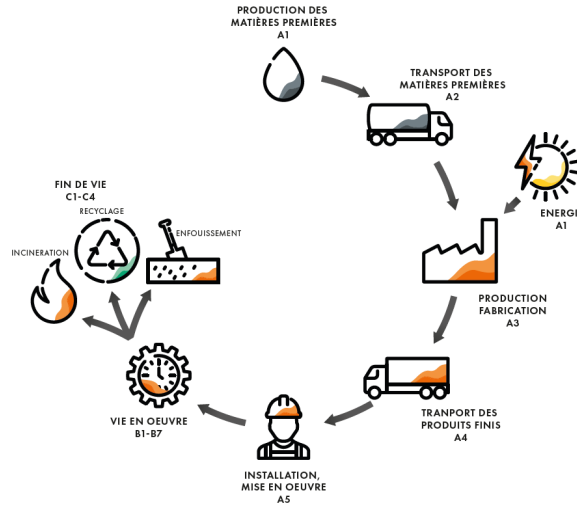


Diagram 1 Life Cycle Diagram

The most impactful process in the life cycle of INSUL-TUBE® XT LT is module A1, which covers the production of raw materials. In fact, when analyzing the complete life cycle (excluding module D) and looking at it from the perspective of climate change impact, it becomes clear that more than 82% of the impact comes from the raw material production module.

The stages taken into account in this life cycle analysis are listed in the table below.

DESCRIPTION OF SYSTEM BOUNDARIES (X = INCLUDED IN THE LCA; MND = MODULE NOT DECLARED)														
Production stage	Construction stage		Use stage						End of life			BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES		
Product	Transport	Processus de construction installation	Utilisation	Maintenance	Réparation	Remplacement	Réhabilitation	Utilisation de l' énergie durant l' étape de d' utilisation	Utilisation de l' eau durant l' étape d' utilisation	Démolition/déconstruction	Transport	Traitement des déchets	Elimination	Possibilité de réutilisation, récupération, recyclage

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 includes the extraction, production, and transportation of raw materials, the generation of energy consumed on site, the manufacturing of INSUL-TUBE® XT LT in Poland, as well as their packaging and storage prior to shipment and delivery.

Waste treatment at the factory exit involves a mix of recycling and incineration.

The aggregation of modules A1, A2, and A3 is an option provided by the EN 15804+A2 standard. This rule is applied to this FDES.

- A1 Raw Material Supply

This module covers the supply and processing of raw materials and the energies generated upstream of the manufacturing process.

- A2 Transportation to the Manufacturing Site

For this module, both road and maritime transportation are modeled.

Vehicles used in the modeling: mixed Euro 0-6 diesel-powered freight trucks with a loading capacity of 27 tons. The loading rate of trucks for 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, operating on the high seas.

- A3 Production

Manufacturing INSUL-TUBE® XT LT involves several steps. The first step is mixing the various ingredients in a Banbury mixer. The output is a first compact rubber sheet, which is introduced again into a mixer. This produces another sheet, which is cooled, cut into slabs, and stored. The next part of the process is extrusion; in this step, the rubber slabs and other ingredients are fed into the extruder. Everything passes through a mixing screw inside a heated barrel and comes out through dies in the form of tubes. The INSUL-TUBE® XT LT tubes are then sent into an oven, where they cure to reach the correct density and dimensions. After passing through a cooling bath, they are cut to length, then move to the packaging phase where they are arranged in boxes. They are then finished with the application of a self-adhesive strip and a covering adhesive foam rubber strip.

Construction stage, A4-A5

- A4 Transport

This stage models the transportation of INSUL-TUBE® XT LT 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, for example, long-distance truck, ship, etc.	Mixed Euro 0-6 diesel-powered freight truck with a loading capacity of 27 tons. Diesel consumption of 38 liters per 100 km.
Distance to the construction site	1557 km
Utilization of capacity (including empty return trips)	20% of mass capacity.

Bulk density of the transported products	De 45 à 65 kg/m ³
Volume capacity utilization coefficient	< 1

– A5 Installation

Installation of INSUL-TUBE® XT LT is carried out manually and does not require any special tools, except for a knife. The cardboard packaging brought to the site is assumed to be recycled. Auxiliary inputs have not been included in the life cycle analysis.

Parameter	Value
Auxiliary inputs for installation (specified by material)	Glue and/or adhesive tape may be used; their application should follow the manufacturers' recommendations.
Water use	Not applicable
Use of other resources	Not applicable
Quantitative description of energy type (regional mix) and consumption during installation process	Not applicable
Waste produced on the construction site prior to the treatment of waste generated by product installation (specified by type)	The products can be joined end-to-end and any leftover pieces can be reused for other ducts. As a result, the amount of unusable material on site is very low, and a loss rate of 2% has been adopted as recommended in standard EN 16783, which equates to 0.0096 kg per metre of INSUL-TUBE® XT LT installed.
Materials (specified by type) produced by waste treatment on the construction site, e.g. collection for recycling, energy recovery, disposal (specified by route)	Site waste is considered to be landfilled, while packaging cartons are assumed to be recycled. Based on paper and cardboard recycling data in France from Eurostat statistics, 82.2% of paper and cardboard was recycled in France (2020, latest available data). Therefore, in the model, an installation packaging waste rate of 17.8% was considered, this portion being landfilled. This represents 0.165 kg for recycling and 0.036 kg of cardboard landfilled per metre of INSUL-TUBE® XT LT installed.
Direct emissions to ambient air, soil and water	Not applicable

Use phase, B1-B7

Once installed, the INSUL-TUBE® XT LT product requires no maintenance or repair. It will be removed at the end of the building's life or when the heating or sanitary system is replaced. Furthermore, the product does not undergo any modification or degradation throughout its service life. For these reasons, there is no impact for modules B1 to B7.

End-of-Life Stage, C1-C4

– C1 Déconstruction, démolition

As with the installation of the product, dismantling is carried out manually and does not require any specific equipment other than a knife. Additionally, dismantling is usually done at the same time as the replacement of the heating or sanitary system. Consequently, there is no impact associated with this module.

- C2 Transport

The chosen mode of transport for the end-of-life stage is by truck with a mixed Euro 0-6 diesel engine and a loading capacity of 27 tons. Diesel consumption is 38 liters per 100 km. The average distance between the dismantling sites and the treatment center (landfill) was estimated at 50 km.

- C3 Waste treatment for reuse, recovery, and/or recycling and C4 disposal.

The end-of-life phase of INSUL-TUBE® XT LT has been modeled based on a scenario of 100% landfill disposal, as prescribed by Annex L of the national supplement to standard NF EN 15804 A2. Therefore, there is no impact associated with module C3.

Parameter	Value
Collection process	Manual dismantling
Specified recovery system by type	0.0 kg of foam intended for recycling 0.0 kg of foam intended for energy recovery
Specified disposal by type	0.478 kg intended for final disposal
Assumptions for scenario development	Transport over a distance of 50 km

Potential for recycling / reuse / recovery, D

Outside the system boundaries, since the product is disposed of by landfill, there is neither benefit nor burden beyond the system boundaries.

Information for Life Cycle Assessment Calculation

PCR used	NF EN 15804+A2 and its national supplement NF EN 15804/CN, with the chosen method being the characterisation factors from the EC-JRC (EF 3.1).
System boundary	The study covers the entire life cycle as defined by the NF EN 15804+A2 standard.
Allocations	All inputs and outputs have been accounted for based on mass allocation.
Cut-off rules	Cleaning of workshops, the administrative department, employee transport, manufacturing, and heavy maintenance of production equipment have been excluded from the system boundaries in accordance with the NF EN 15804/CN standard.
Geographical and temporal representativeness of primary data	The primary data collected for the manufacture of the product studied are representative of the 2023 production at the NMC Poland and NMC France sites. The software used for the LCA is Sphera LCA for expert / Service Pack 2024002000. The energy mix for modules A1-A3 is the residual grid mix for Poland from Ecoinvent 3.10, with a GWP impact of 1.094 kg CO ₂ e/kWh. The GWP value for the gas used in modules A1-A3 in Poland is 0.250 kg CO ₂ e/kWh, and the dataset used was PL: Thermal energy from natural gas Sphera. A weighted average

	based on the total production of all references was calculated for the LCA, using 1 kg of INSUL-TUBE® XT LT as the unit.
Results variability	The results presented in this study are for INSUL-TUBE® XT LT 89-25, which therefore covers the entire range of INSUL-TUBE® XT LT products. Climate Change – Total: -90.6/+0% Total use of non-renewable primary energy resources (excluding non-renewable primary energy resources used as raw materials): -90.6/+0% Non-hazardous waste disposed of: -90.6/+0%

Life Cycle Assessment Results

Below are the tables that summarize the LCA results for 1 linear meter of INSUL-TUBE® XT LT 89-25 insulation sleeve.

Due to rounding, totals may not correspond exactly to the sum of the rounded values.

MND: Module Not Declared

For energy indicators used as raw materials: a negative value indicates a change in use from raw materials to fuels (for example, in the case of incineration). Application of Annex I of the 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>	2,24E+00	6,42E-02	2,85E-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	3,72E-03	0,00E+00	1,41E-02	0,00E+00
Changement climatique – combustibles fossiles <i>kg CO2 equiv/UF ou U</i>	2,23E+00	6,29E-02	2,39E-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	3,65E-03	0,00E+00	1,40E-02	0,00E+00
Changement climatique - biogénique <i>kg CO2 equiv/UF ou UD</i>	1,04E-02	1,78E-04	2,61E-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	1,05E-05	0,00E+00	4,30E-05	0,00E+00
Changement climatique – occupation des sols et transformation de l'occupation des sols <i>kg CO2 equiv/UF ou UD</i>	1,75E-03	1,04E-03	4,30E-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	6,13E-05	0,00E+00	5,17E-05	0,00E+00
Appauvrissement de la couche d'ozone <i>kg de CFC 11 equiv /UF ou UD</i>	1,03E-09	9,11E-15	4,93E-15	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,37E-16	0,00E+00	4,63E-14	0,00E+00
Acidification <i>mole de H+ equiv / UF ou UD</i>	1,51E-02	8,08E-05	1,21E-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	4,79E-06	0,00E+00	8,40E-05	0,00E+00
Eutrophisation aquatique, eaux douces <i>kg P equiv / UF ou UD</i>	1,13E-04	2,64E-07	3,98E-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	1,56E-08	0,00E+00	8,05E-06	0,00E+00
Eutrophisation aquatique marine <i>kg N equiv / UF ou UD</i>	1,80E-03	2,95E-05	6,66E-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	1,76E-06	0,00E+00	1,81E-05	0,00E+00
Eutrophisation terrestre <i>mole N equiv / UF ou UD</i>	1,86E-02	3,45E-04	4,21E-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	2,05E-05	0,00E+00	1,98E-04	0,00E+00
Formation d'ozone photochimique <i>kg de NMCOV equiv/UF ou UD</i>	6,12E-03	9,27E-05	2,37E-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	4,86E-06	0,00E+00	5,79E-05	0,00E+00
Epuisement des ressources abiotiques (minéraux & métaux) <i>kg Sb equiv/UF ou UD</i>	1,38E-02	5,38E-09	1,03E-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	3,18E-10	0,00E+00	9,32E-10	0,00E+00
Epuisement des ressources abiotiques (combustibles fossiles) <i>MI/UF ou UD</i>	3,70E+01	8,14E-01	3,52E-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	4,81E-02	0,00E+00	2,37E-01	0,00E+00
Besoin en eau <i>m3 de privation equiv dans le monde / UF ou UD</i>	5,22E-01	9,57E-04	1,91E-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	5,65E-05	0,00E+00	1,81E-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>	8,20E-07	8,35E-10	1,18E-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	4,75E-11	0,00E+00	8,69E-10	0,00E+00
Rayonnements ionisants (santé humaine) <i>kBq de U235 equiv / UF ou UD</i>	7,11E-02	2,15E-04	6,49E-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	1,27E-05	0,00E+00	4,58E-04	0,00E+00
Ecotoxicité (eaux douces) <i>CTUe / UF ou UD</i>	1,99E+01	6,04E-01	3,25E-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	3,57E-02	0,00E+00	5,13E-01	0,00E+00
Toxicité humaine, effets cancérigènes <i>CTUh / UF ou UD</i>	6,59E-10	1,22E-11	6,67E-13	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,21E-13	0,00E+00	7,62E-12	0,00E+00
Toxicité humaine, effets non cancérigènes <i>CTUh / UF ou UD</i>	2,20E-08	5,48E-10	6,19E-11	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,23E-11	0,00E+00	1,59E-10	0,00E+00
Impacts liés à l'occupation des sols / Qualité des sols <i>Sans dimension / UF ou UD</i>	1,26E+01	4,01E-01	3,77E-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	2,36E-02	0,00E+00	4,03E-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>	5,76E+00	7,01E-02	3,83E-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	4,14E-03	0,00E+00	3,58E-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>	5,76E+00	7,01E-02	3,83E-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	4,14E-03	0,00E+00	3,58E-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>	3,13E+01	8,14E-01	3,52E-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	4,81E-02	0,00E+00	2,37E-01	0,00E+00
Utilisation des ressources d'énergie primaire non renouvelables en tant que matières premières - <i>MJ/UF ou UD</i>	5,76E+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 non renouvelables (énergie primaire et ressources d'énergie primaire utilisées comme matières premières) - <i>MJ/UF ou UD</i>	3,70E+01	8,14E-01	3,52E-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	4,81E-02	0,00E+00	2,37E-01	0,00E+00
Utilisation de matière secondaire - <i>kg/UF ou UD</i>	1,64E-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	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>	1,94E-02	7,81E-05	5,70E-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	4,61E-06	0,00E+00	5,42E-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	1,26E-02	3,12E-11	6,51E-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	1,84E-12	0,00E+00	5,86E-11	0,00E+00
Déchets non dangereux éliminés - kg/UF ou UD	2,83E-01	1,33E-04	3,14E-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	7,85E-06	0,00E+00	4,75E-01	0,00E+00
Déchets radioactifs éliminés - kg/UF ou UD	5,45E-04	1,48E-06	4,41E-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	8,76E-08	0,00E+00	3,34E-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	8,21E-03	0,00E+00	1,35E-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	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>	2,24E+00	9,27E-02	0,00E+00	1,78E-02	2,35E+00	0,00E+00
Changement climatique – combustibles fossiles <i>kg CO2 equiv/UF ou U</i>	2,23E+00	6,53E-02	0,00E+00	1,77E-02	2,31E+00	0,00E+00
Changement climatique - biogénique <i>kg CO2 equiv/UF ou UD</i>	1,04E-02	2,63E-02	0,00E+00	5,35E-05	3,68E-02	0,00E+00
Changement climatique – occupation des sols et transformation de l'occupation des sols <i>kg CO2 equiv/UF ou UD</i>	1,75E-03	1,04E-03	0,00E+00	1,13E-04	2,91E-03	0,00E+00
Appauvrissement de la couche d'ozone <i>kg de CFC 11 equiv /UF ou UD</i>	1,03E-09	1,40E-14	0,00E+00	4,68E-14	1,03E-09	0,00E+00
Acidification <i>mole de H+ equiv / UF ou UD</i>	1,51E-02	9,29E-05	0,00E+00	8,88E-05	1,52E-02	0,00E+00
Eutrophisation aquatique, eaux douces <i>kg P equiv / UF ou UD</i>	1,13E-04	6,62E-07	0,00E+00	8,06E-06	1,22E-04	0,00E+00
Eutrophisation aquatique marine <i>kg N equiv / UF ou UD</i>	1,80E-03	3,61E-05	0,00E+00	1,98E-05	1,86E-03	0,00E+00
Eutrophisation terrestre <i>mole N equiv / UF ou UD</i>	1,86E-02	3,87E-04	0,00E+00	2,19E-04	1,92E-02	0,00E+00
Formation d'ozone photochimique <i>kg de NMCOV equiv/UF ou UD</i>	6,12E-03	1,16E-04	0,00E+00	6,27E-05	6,30E-03	0,00E+00
Epuisement des ressources abiotiques (minéraux & métaux) <i>kg Sb equiv/UF ou UD</i>	1,38E-02	5,49E-09	0,00E+00	1,25E-09	1,38E-02	0,00E+00
Epuisement des ressources abiotiques (combustibles fossiles) <i>MJ/UF ou UD</i>	3,70E+01	8,50E-01	0,00E+00	2,85E-01	3,82E+01	0,00E+00
Besoin en eau <i>m3 de privation equiv dans le monde / UF ou UD</i>	5,22E-01	1,15E-03	0,00E+00	1,87E-03	5,25E-01	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>	8,20E-07	9,53E-10	0,00E+00	9,17E-10	8,22E-07	0,00E+00
Rayonnements ionisants (santé humaine) <i>kBq de U235 equiv / UF ou UD</i>	7,11E-02	2,80E-04	0,00E+00	4,71E-04	7,19E-02	0,00E+00
Ecotoxicité (eaux douces) <i>CTUe / UF ou UD</i>	1,99E+01	6,37E-01	0,00E+00	5,49E-01	2,11E+01	0,00E+00
Toxicité humaine, effets cancérigènes <i>CTUh / UF ou UD</i>	6,59E-10	1,29E-11	0,00E+00	8,34E-12	6,81E-10	0,00E+00
Toxicité humaine, effets non cancérigènes <i>CTUh / UF ou UD</i>	2,20E-08	6,10E-10	0,00E+00	1,92E-10	2,28E-08	0,00E+00
Impacts liés à l'occupation des sols / Qualité des sols <i>Sans dimension / UF ou UD</i>	1,26E+01	4,04E-01	0,00E+00	6,39E-02	1,30E+01	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 comme matières premières - MJ/UF ou UD	5,76E+00	7,40E-02	0,00E+00	4,00E-02	5,88E+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	5,76E+00	7,40E-02	0,00E+00	4,00E-02	5,88E+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	3,13E+01	8,50E-01	0,00E+00	2,85E-01	3,24E+01	0,00E+00
Utilisation des ressources d'énergie primaire non renouvelables en tant que matières premières - MJ/UF ou UD	5,76E+00	0,00E+00	0,00E+00	0,00E+00	5,76E+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	3,70E+01	8,50E-01	0,00E+00	2,85E-01	3,82E+01	0,00E+00
Utilisation de matière secondaire - kg/UF ou UD	1,64E-01	0,00E+00	0,00E+00	0,00E+00	1,64E-01	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 - m ³ /UF ou UD	1,94E-02	8,38E-05	0,00E+00	5,88E-05	1,95E-02	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	1,26E-02	3,77E-11	0,00E+00	6,04E-11	1,26E-02	0,00E+00
Déchets non dangereux éliminés - kg/UF ou UD	2,83E-01	3,16E-02	0,00E+00	4,75E-01	7,90E-01	0,00E+00
Déchets radioactifs éliminés - kg/UF ou UD	5,45E-04	1,92E-06	0,00E+00	3,43E-06	5,50E-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	8,21E-03	1,35E-01	0,00E+00	0,00E+00	1,43E-01	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

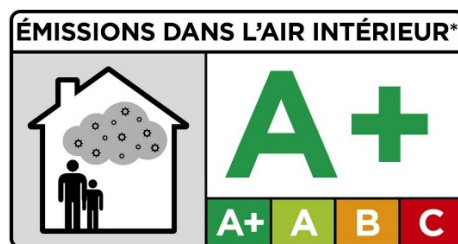
Indoor air

COV et formaldéhyde

CEFEP (the European group of Flexible Elastomeric Foam (FEF) manufacturers) commissioned the Eurofins institute to conduct tests and assessments in accordance with EN 16516; AgBB, ISO 16000-3; ISO 16000-6; ISO 16000-9, and ISO 16000-11 for a broad, typical range of FEF foams, including an NMC foam. The conclusion is that emissions from FEF foams are significantly lower than the limit values defined by the requirements of French regulations DEVP0908633A of April 30, 2009 and DEVP0910046A of May 28, 2009, the Belgian royal decree for indoor emissions, and the German AgBB scheme.

The test was conducted by Eurofins Product Testing A/S laboratory (Test report No.: 392-2013-GSH-CEFEP_01).

VOC emission classification: The tested product received 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:

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

Soil and Water

Not relevant for the product in question, 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 hygrothermal comfort conditions in the building

The product's thermal conductivity is ≤ 0.038 W/mK at 40 °C for thicknesses less than or equal to 25 mm, and ≤ 0.040 W/mK at 40 °C for thicknesses of 32 mm. The test was conducted by the FIW München laboratory, Test report no. G2-18-1541-03.

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

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

Product features contributing to the creation of visual comfort conditions in the building

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

Product Features Contributing to the Creation of Olfactory Comfort Conditions in the Building

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

Positive environmental contribution

INSUL-TUBE® XT LT contributes to both the economic and ecological efficiency of heating and sanitary installations. By preventing heat and energy losses from the systems it insulates, INSUL-TUBE® XT LT can help optimize the building's environmental footprint. In addition to its guaranteed NMC effectiveness, it is characterized by excellent dimensional stability, good value for money, and ease of installation.

Annexe

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

Annexe 1