

# Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

**INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT from  
NMC**



Programme:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products, based on the average results of the product group
EPD registration number:	EPD-IES-0026363:001
Version date:	2025-12-03
Validity date:	2030-12-02

*An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see [www.environdec.com](http://www.environdec.com)*



## General information

Programme Information	
<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
<b>E-mail:</b>	<a href="mailto:support@environdec.com">support@environdec.com</a>

Product Category Rules (PCR)
<b>CEN standard EN 15804 serves as the Core Product Category Rules (PCR)</b>
<b>Product Category Rules (PCR):</b> PRODUCT CATEGORY RULES PCR 2019:14 VERSION 2.0.1 CONSTRUCTION PRODUCTS; UN CPC code: 36320
<b>PCR review was conducted by:</b> The Technical Committee of the International EPD® System. The review panel may be contacted via <a href="mailto:info@environdec.com">info@environdec.com</a> . Chair of the PCR review: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat <a href="http://www.environdec.com/contact">www.environdec.com/contact</a>
<b>c-PCR:</b> EN 16783:2024 Thermal insulation products C-PCR-005 (TO PCR 2024:14).

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
<input checked="" type="checkbox"/> <b>Individual EPD verification without a pre-verified LCA/EPD tool</b>
Third-party individual verifier: Matthew Fishwick, Fishwick Environmental Ltd
Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier:
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## INFORMATION ABOUT EPD OWNER

Owner of the EPD:

NMC Polska Sp. zo.o.

Address:

NMC Polska Sp. zo.o.  
Ul. Pyskowicka 15  
PL-41807 Zabrze

Contact:

[biuro@nmc.pl](mailto:biuro@nmc.pl)

Description of the organisation:

NMC is a leading, growth-oriented international company specializing in synthetic foams. For 70 years, the company has put customers and people at the heart of its actions, identifying more and more products and solutions that contribute to comfort and protection for a better life. Some 1,650 employees at 22 sites currently serve customers in 120 countries.

NMC is active in the following sectors: solutions for industries, technical insulation, protective packaging, decorative design elements, underlays for floating floors and sport and leisure.

Product-related or management system-related certifications:

The production site is ISO 9001:2015 certified.

EPD Type

This EPD is an EPD of multiple products, based on the average results of the product group. The raw materials and manufacturing processes are identical across the group. The products vary in thickness, width, and length. A subset of the brand (INSUL ROLL XT and INSUL SHEET XT) consists of the same product, additionally equipped with a self-adhesive layer. The LCA results presented in this EPD reflect the average performance of the entire product group.

## PRODUCT INFORMATION

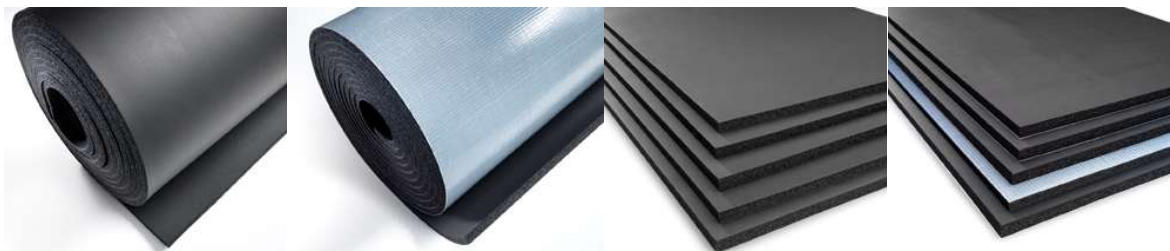
Product name:

INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT

Product identification:

Brand: INSUL Assortment: INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT

Visual representation of the product:



INSUL ROLL

INSUL ROLL XT

INSUL SHEET

INSUL SHEET XT

UN CPC code:

36320

Product description:

INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT are flexible, closed-cell insulation materials made from NBR rubber, available in roll or sheet form. They are specifically designed to enhance energy efficiency in refrigeration and air conditioning systems.

Their low thermal conductivity, high flexibility, and strong resistance to water vapor diffusion help prevent condensation and extend the service life of installations.

Optimized for a wide range of applications, they comply with fire safety standards and offer excellent dimensional stability, easy installation, and outstanding cost-effectiveness.

These products are ideal for custom cutting, making them suitable for insulating large pipes, flanges, containers, and similar components, with minimal material waste.

INSUL ROLL XT and INSUL SHEET XT feature a self-adhesive closure system that simplifies installation and can reduce assembly time by up to 50%.

(More information on <https://nmc-insulation.com/downloads/>)

Name and location of production site:

NMC Polska Sp. z o.o.  
Ul. Pyskowicka 15  
PL-41807 Zabrze

Geographical scope:

The raw materials are sourced globally, the product is manufactured in Poland and marketed, used and disposed of in Europe.

## CONTENT DECLARATION

The mass (weight) per functional unit:

55 kg (Functional unit) average of the product group.

Product components	Mass (kg per functional unit)	Post-consumer material, mass-% (% per functional unit)	Biogenic material, kg C / functional unit
Polymers	14,8	0	0
Foaming agent	5,1	0	0
Fire retardant	24,6	0	0
Fillers, pigments and additives	7,3	0	0
Self-adhesive layer	3,2	0	0
TOTAL	55,0	0,0	0,0

Packaging materials	Mass (kg per functional unit)	Mass-% (versus the product)	Biogenic material, kg C / functional unit
Cardboard	14,01	25,5	5,63
TOTAL	14,01	25,5	5,63

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO<sub>2</sub>.

Note: Packaging varies from one item to another; in the table above, the packaging values indicated are a weighted average based on the production quantities of the various items.

Under the European Chemicals Regulation REACH, manufacturers, importers, and downstream users must register their chemicals and are responsible for their safe use.

REACH regulation states that manufacturers and importers of products are required to notify their customers of the presence of any Substance of Very High Concern (SVHC) in excess of 0,1% by weight. This is the case for the two chemical substances, i.e. azodicarbonamide (ADCA) & medium-chain chlorinated paraffins (MCCP), we're using in some of our production processes.

**ADCA (Azodicarbonamide) was added to the candidate list of Substances of Very High Concern for its possible respiratory sensitizing properties.**

ADCA is a chemical compound which is frequently used as chemical blowing agent, which decomposes during heat induced foaming processes commonly used to produce certain foams. Residual ADCA levels in those foams are typically very low, but not nil. In our production processes we take special care to ensure residual ADCA levels as low as technically feasible. Our rubber foams, produced at NMC Polska Sp.Zo.o (Zabrze, Poland), shows levels which exceed the 0,1 wt% threshold value. In alignment with REACH these grades have been notified and can be consulted in the SCIP database.

Due to the physical encapsulation of the ADCA traces in our foam products and the nature of the risks identified by ECHA, no special care needs to be taken when storing, handling and installing our products listed in Annex 1.

**MCCP (Middle Chain Chlorinated paraffins) were added to the candidate list of Substances of Very High Concern for its possible persistent, bio accumulative and toxic properties.**

MCCP is commonly used as a plasticizer & flame retardant in rubber products. Although we are looking for alternatives, we confirm that all our current rubber foams (INSUL brand), produced at NMC Polska Sp.Zo.o (Zabrze, Poland), show levels which exceed the 0.1 wt% threshold value. In alignment with REACH these grades have been notified and can be consulted in the SCIP database.

As for most plasticizers it cannot be excluded that MCCP migrates. Due to the nature of the risks identified by ECHA, it is recommended to wear protective gloves when handling & installing foams containing MCCP and to ensure sufficient ventilation.

For the product references listed in Annex 1 a paragraph on ADCA and MCCP has been added to their resp. Declaration of Performances, which can be downloaded via the following link: [www.nmc-insulation.com/download](http://www.nmc-insulation.com/download).

## LCA INFORMATION

### Functional Unit:

The Functional Unit is "1 m<sup>3</sup> (55 kg/m<sup>3</sup> of INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT".

Remark: EPD of multiple products, based on the average results of the product group

### Product lifespan:

50 years

#### Time representativeness:

The complete reference year used for the plant production data is 2024.

#### Geographical and temporal representativeness of primary data

The primary data collected relating to the manufacture of the product studied are representative of production in 2024 for the NMC Poland site. The electricity consumption at NMC Poland was supplied by the Polish national grid. The electricity production process used for the plant is 'Electricity, low voltage, residual mix – PL – electricity, low voltage' from the ecoinvent 3.11 database, and it has a Global Warming Potential (GWP) impact of 1.0 kg CO<sub>2</sub>-eq. per kWh.

#### Database(s) and LCA software used:

The LCA and results were calculated using LCA for Expert 10.9 and its content version 2025. Some of the data used comes from the ECOINVENT 3.11 database in the cut-off version.

#### Description of system boundaries:

Cradle to grave and module D.

#### Cut-off Criteria for the Exclusion of Inputs and Outputs:

In compliance with the rules in EN 15804:2012+A2:2019, 6.3.6, the cut-off criteria are 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input of a unit process. All known inputs and outputs were included. Data gaps were filled with conservative assumptions and generic data. The neglected input flows are each below 1% of the total mass or the total impact of primary energy. In total, they constitute less than 5% of the overall mass or 5% of the total energy. Offcuts generated during installation are landfilled.

Auxiliary inputs were not included in the life cycle analysis of INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT. These mainly consist of adhesive and tape. Since the final installer may choose different materials based on preferences or installation methods, the environmental impacts of these auxiliary inputs must be calculated separately by the installer.

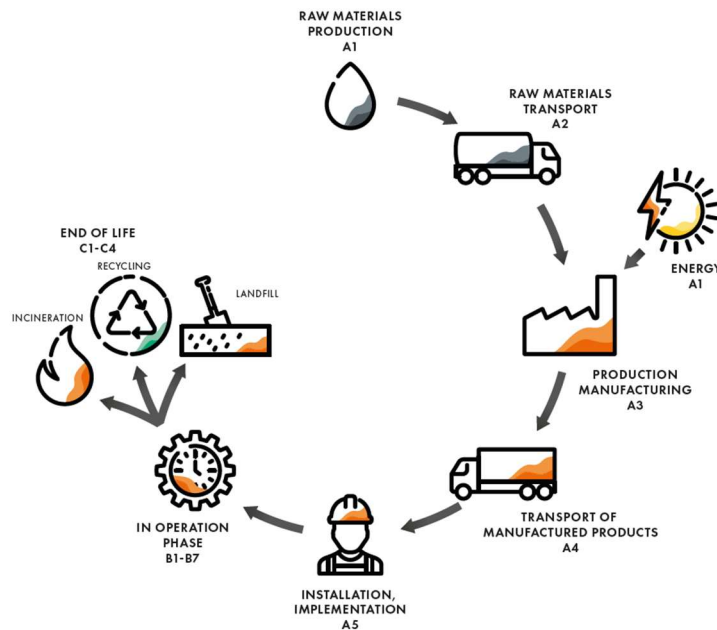
Workshop cleaning, the administrative department, employee transport, manufacturing and heavy maintenance of production equipment have been omitted from the boundaries of the system in accordance with standard EN 15804.

#### Allocations methods

Certain production processes generate pre-consumer waste that cannot be recycled or reused. This waste is disposed of in landfill sites. In accordance with PCR 2019:14 v2.0.1, the landfilling of production waste is modelled within module A3, as it occurs during the manufacturing phase. The modelling includes emissions from waste degradation and long-term environmental impacts associated with landfilling. Data is sourced from the Sphera database and reflects typical industrial waste disposal practices. No allocation is applied to this waste flow, as it does not generate secondary materials or economic value. The cut-off end-of-life allocation approach is consistently applied for materials leaving the product system for recycling (in module C3). Site-level processes are allocated to products based on their respective production mass.

No recycled material is used in the production of INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT.

Process flow diagram:



- Production stage, A1- A3:

This stage considers the extraction, production and transport of raw materials, the production of energy consumed on site, the manufacture of INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT, its packaging and storage prior to shipment and delivery. The treatment of waste leaving the plant is a mix of recycling and Landfill.

- A1 Raw materials supply

This module takes into account the supply and processing of raw materials and the energies generated upstream of the manufacturing process.

- A2 Transport to manufacturing site

This module takes into account road transport. Vehicles used in the modelling: Euro 0-6 diesel mix freight truck with a loading capacity of 27 tons. The truck loading rate for raw materials has been estimated at 50%.

- A3 Production

The manufacturing process of INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT involves several key steps. It begins with the mixing of raw materials, followed by the extrusion of a rubber ribbon. Intermediate steps include temporary storage and a second mixing phase, during which specific additives are used to control the final properties of the product.

The rubber ribbon is then fed into an extruder and shaped by passing through a die. It is subsequently transferred to an oven, where foaming and cross-linking occur to achieve the desired density and dimensions.

After cooling and cutting to the required length, the resulting sheets or rolls are packaged in cardboard boxes. XT versions are equipped with adhesive strips, which are applied to the surface during the final stage of production.

- A4 transport

This step models the transport of INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT from the production site to the building site, in most cases via an intermediary.

Scenario information	Value	Unit
Vehicle type	Truck-trailer, Euro 0 - 6 mix POCP adapted	
Fuel type	Diesel	
Distance	569	km
Fill rate mass payload capacity	20	%
Gross vehicle weight	34 - 40t gross weight / 27t payload capacity	t

- A5 Installation

INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT are installed manually and require no special tools other than a knife.

Based on data from the European Paper Recycling Council, it is assumed that the cardboard packaging delivered to the site is partly recycled, while the remainder is incinerated. The figures used are 79.3% recycled and 20.7% incinerated.

Auxiliary inputs have not been included in the life-cycle analysis.

Scenario information	Value	Unit
Auxiliary inputs for installation	Not applicable	kg
Water use	Not applicable	m <sup>3</sup>
Use of other resources	Not applicable	kg
Quantitative description of energy type (regional mix) and consumption during installation process	Not applicable	kWh or MJ
Material waste on construction site prior to treatment of waste generated by product installation (specified by type)	The 2% loss criterion has been adopted as recommended in EN 16783, which is equivalent to 1,1 kg per m <sup>3</sup> of product placed.	kg
Outgoing materials (specified by type) generated by waste processing on the construction site, e.g. collection for recycling, energy recovery, disposal (specified by route)	Construction site waste is considered sent to landfill. (1,1 kg) Cardboard packaging is considered sent to recycling centre 11,1 kg and 2,9 kg sent to Incineration.	kg
Direct emissions into ambient air, soil and water	Not applicable	kg

- Life stage in use, B1-B7

Once installed, INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT requires no maintenance or repair. It is dismantled at the end of the building's life or removed when no longer required. In addition, the product undergoes no modification or degradation throughout its entire life cycle. 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 carried out manually and requires no special equipment other than a knife. Consequently, there is no impact associated with this module.

- C2 Transport

The choice of transport for the end-of-life stage was that of truck with a Euro 0-6 diesel mix engine and a loading capacity of 27 tons. Diesel consumption of 38 Liters per 100 km. The average distance between the dismantling site and the treatment centre (incinerator and landfill) was estimated at 50 km.

- C3 Treatment of waste for reuse, recovery and/or recycling and C4 disposal.

Due to the lack of specific information on the recyclability of INSU ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT the assumed end-of-life scenario is a mix of landfill and incineration.

Scenario information	Value and Unit
Collecting process	Manual disassembly
Type-specified recovery system	32,5 kg foam for energy recovery
Elimination specified by type	22,5 kg for final disposal (Landfill)
Scenario assumptions	Transport over 50 km

- Module D

A benefit beyond the boundaries of the system is the recovery of energy generated from the incineration of waste at end-of-life. In the LCA end-of-life calculation, there is no gain for landfill; the gains in energy recovered during incineration have been taken into account by the Sphera software and are accounted for in module D.

For recycling, burdens associated with the recycling process are included, and quality adjustment factors are applied according to PCR 2019:14 v2.0.1. Net scrap is calculated as output scrap minus input scrap. For incineration, the energy content of the material is considered, and efficiency factors for heat and electricity recovery are applied. Datasets for avoided products (e.g., Rubber or paper and electricity and heat) are taken from the GaBi database.

More information:

More product details: <https://nmc-insulation.com/downloads/>

Name and contact information of LCA practitioner: Alain Baltus NMC sa Gert-Noël-Strasse B-4731 Eynatten [info@nmc.eu](mailto:info@nmc.eu)

INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT are manufactured at NMC's Poland site. The life cycle analysis was carried out based on average results for the product group. For the LCA calculation, all elementary input processes, as well as energy and water consumption and waste outputs, were considered.

This EPD only includes environmental impacts directly related to the product itself, such as material losses and packaging disposal. Auxiliary inputs are excluded from this LCA study, as their use depends

on the specific choices made by the end user and cannot be consistently defined across all product applications.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	Global	EU 27	PL	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	
Share of specific data	21,5%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – sites	N/A (single site)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Note: X = Modules declared, ND = Modules not declared

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Overview of Data Quality and Primary Data Contribution (A1–A3)

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Azodicarbonamide	Database	LCA for Expert V 2025.1	2024	Secondary data	0%
Nitrile butadiene rubber	Database	LCA for Expert V 2025.1	2024	Secondary data	0%
PL: Thermal energy from natural gas	Database	LCA for Expert V 2025.1	2021	Primary data	13%
electricity, low voltage, residual mix	Database	LCA for Expert V 2025.1	2024	Primary data	7,4%

Thermal energy from light fuel oil	Database	LCA for Expert V 2025.1	2021	Primary data	1%
Total share of primary data, of GWP-GHG results for A1-A3					21,5%

The share of primary data for modules A1-A3 is 21,5%, mainly because most raw materials (e.g. nitrile butadiene rubber) are modelled using generic databases. In accordance with the PCR, these materials are reported as secondary data even though they contribute significantly to GWP-GHG results.

### Data Quality Assessment Summary

In accordance with the requirements of Section A.5.4 of the GPI 5.0, a data quality assessment was conducted for all datasets used in the life cycle assessment (LCA) of the product. All data are secondary, originating from recognized LCA databases. At present, obtaining primary data directly from suppliers remains very challenging.

The overall assessment of data quality yielded the following average scores (1 = very good, 5 = very poor):

Temporal representativeness: 1,3

Geographical representativeness: 2,4

Technological representativeness: 2,3

These scores reflect the current limitations in data availability and supplier access. Nevertheless, the selected datasets are considered sufficiently representative for the intended use of the EPD and comply with the transparency requirements of the PCR and GPI.

## ENVIRONMENTAL PERFORMANCE

### LCA results of the products - main environmental performance results

#### Mandatory impact category indicators according to EN 15804

For the characterization factors (CF) to be used, EN 15804 refers to the “EN 15804 reference package” available at the JRC webpage. In February 2023, this reference package was updated to be based on the EF 3.1 package for CFs to be used in the PEF framework. For this EPD, the EN 15804 reference package based on EF 3.1 is being used.

Results per Functional Unit 1 cubic meter INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	2,15E+02	6,41E+00	2,18E+01	0,00E+00	0,00E+00	2,53E-01	8,12E+01	6,81E-01	-3,15E+01
GWP-fossil	kg CO <sub>2</sub> eq.	2,37E+02	6,35E+00	2,47E-01	0,00E+00	0,00E+00	2,50E-01	8,12E+01	6,79E-01	-3,14E+01
GWP-biogenic	kg CO <sub>2</sub> eq.	-2,16E+01	0,00E+00	2,16E+01	0,00E+00	0,00E+00	0,00E+00	2,61E-03	0,00E+00	0,00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	2,44E-01	6,37E-02	3,55E-04	0,00E+00	0,00E+00	2,57E-03	5,86E-03	1,86E-03	-4,32E-02
ODP	kg CFC 11 eq.	1,68E-07	1,03E-12	5,37E-13	0,00E+00	0,00E+00	4,14E-14	1,74E-11	2,32E-12	-2,95E-10
AP	mol H <sup>+</sup> eq.	1,52E+00	9,62E-03	1,25E-03	0,00E+00	0,00E+00	3,62E-04	1,05E-02	4,05E-03	-3,71E-02
EP-freshwater	kg P eq.	1,69E-03	1,67E-05	4,21E-05	0,00E+00	0,00E+00	6,72E-07	2,45E-06	3,79E-04	-2,87E-05
EP-marine	kg N eq.	1,92E-01	3,99E-03	6,74E-04	0,00E+00	0,00E+00	1,48E-04	2,90E-03	8,77E-04	-1,07E-02
EP-terrestrial	mol N eq.	1,87E+00	4,18E-02	4,29E-03	0,00E+00	0,00E+00	1,54E-03	4,83E-02	9,57E-03	-1,20E-01
POCP	kg NMVOC eq.	6,39E-01	1,02E-02	2,39E-03	0,00E+00	0,00E+00	3,29E-04	8,27E-03	2,77E-03	-2,91E-02
ADP-minerals&metals*	kg Sb eq.	1,51E+00	4,12E-07	1,12E-08	0,00E+00	0,00E+00	1,66E-08	1,91E-07	4,62E-08	-3,11E-06
ADP-fossil*	MJ	4,24E+03	7,94E+01	3,60E+00	0,00E+00	0,00E+00	3,20E+00	3,62E+01	1,12E+01	-5,56E+02
WDP*	m <sup>3</sup>	1,27E+01	2,83E-02	1,93E-02	0,00E+00	0,00E+00	1,14E-03	7,70E+00	8,37E-02	-3,27E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

\* Disclaimer 1: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

*Disclaimer 2: The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).*

### Additional mandatory and voluntary impact category indicators

Results per Functional Unit 1 cubic meter INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	2,37E+02	6,41E+00	2,47E-01	0,00E+00	0,00E+00	2,53E-01	8,12E+01	6,81E-01	-3,15E+01

### Resource use indicators

Results per Functional Unit 1 cubic meter INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	3,28E+02	5,98E+00	2,39E+02	0,00E+00	0,00E+00	2,41E-01	8,78E+00	1,88E+00	-1,81E+02
PERM	MJ	2,38E+02	0,00E+00	-2,38E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,66E+02	5,98E+00	4,24E-01	0,00E+00	0,00E+00	2,41E-01	8,78E+00	1,88E+00	-1,81E+02
PENRE	MJ	3,99E+03	7,94E+01	3,60E+00	0,00E+00	0,00E+00	3,20E+00	3,62E+01	1,12E+01	-5,56E+02
PENRM	MJ	2,55E+02	0,00E+00	-2,30E+01	0,00E+00	0,00E+00	0,00E+00	-2,32E+02	0,00E+00	0,00E+00
PENRT	MJ	4,24E+03	7,94E+01	-1,94E+01	0,00E+00	0,00E+00	3,20E+00	-1,96E+02	1,12E+01	-5,56E+02
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
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
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
FW	m <sup>3</sup>	6,61E-01	2,96E-03	5,66E-04	0,00E+00	0,00E+00	1,19E-04	1,83E-01	2,45E-03	-1,41E-01

**Acronyms**  
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

The option for separating primary energy use into energy used as a raw material and energy used as an energy carrier is option A of PCR 2019:14.

<sup>1</sup> This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO<sub>2</sub> is set to zero.

## Waste indicators

Results per Functional Unit 1 cubic meter INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	8,49E-04	3,18E-09	6,14E-10	0,00E+00	0,00E+00	1,28E-10	1,79E-08	2,52E-09	-3,50E-07
Non-hazardous waste disposed	kg	3,74E+01	1,11E-02	3,28E+00	0,00E+00	0,00E+00	4,46E-04	7,37E+00	2,24E+01	-2,77E-01
Radioactive waste disposed	kg	6,26E-02	1,50E-04	4,60E-05	0,00E+00	0,00E+00	6,03E-06	1,22E-03	1,62E-04	-4,17E-02

## Output flow indicators

Results per Functional Unit 1 cubic meter INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	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
Material for recycling	kg	0,00E+00	0,00E+00	1,11E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	2,90E+00	0,00E+00	0,00E+00	0,00E+00	3,25E+01	0,00E+00	0,00E+00
Exported energy, electricity	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
Exported energy, thermal	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

## Additional environmental impact indicators

Results per Functional Unit 1 cubic meter INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Disease incidences	9,00E-05	8,78E-08	1,22E-08	0,00E+00	0,00E+00	3,29E-09	1,27E-07	4,17E-08	-3,02E-07
Ionising radiation, human health	kBq U235 eq.	7,63E+00	2,15E-02	6,68E-03	0,00E+00	0,00E+00	8,66E-04	1,64E-01	2,18E-02	-6,89E+00
Ecotoxicity, freshwater	CTUe	2,46E+03	1,03E+02	3,67E+00	0,00E+00	0,00E+00	4,16E+00	2,41E+01	2,57E+01	-4,89E+01
Human toxicity, cancer	CTUh	4,70E-08	1,39E-09	6,51E-11	0,00E+00	0,00E+00	5,61E-11	1,14E-09	3,54E-10	-5,68E-09

Human toxicity, non-cancer	CTUh	1,63E-06	7,78E-08	5,67E-09	0,00E+00	0,00E+00	3,13E-09	9,19E-08	6,29E-09	-9,37E-08
Land Use	-	8,31E+02	3,51E+01	3,57E-01	0,00E+00	0,00E+00	1,41E+00	8,46E+00	1,74E+00	-1,06E+02

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure, or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

### Complementary End-of-Life Scenarios (100%)

For the additional end-of-life scenarios (100% incineration, 100% landfill), only the mandatory impact indicators defined by EN 15804+A2 are reported. Note: Currently, recycling options remain very limited to recycle this type of product. In practice, such products are mostly sent to landfill or incineration at end-of-life.

### Results per Functional Unit 1 m<sup>3</sup> of INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT End of life 100% Incineration

Indicator	Unit	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	2,53E-01	1,37E+02	0,00E+00	-5,33E+01
GWP-fossil	kg CO <sub>2</sub> eq.	2,50E-01	1,37E+02	0,00E+00	-5,32E+01
GWP-biogenic	kg CO <sub>2</sub> eq.	0,00E+00	4,42E-03	0,00E+00	0,00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	2,57E-03	9,91E-03	0,00E+00	-7,32E-02
ODP	kg CFC 11 eq.	4,14E-14	2,95E-11	0,00E+00	-5,00E-10
AP	mol H <sup>+</sup> eq.	3,62E-04	1,77E-02	0,00E+00	-6,27E-02
EP-freshwater	kg P eq.	6,72E-07	4,14E-06	0,00E+00	-4,86E-05
EP-marine	kg N eq.	1,48E-04	4,91E-03	0,00E+00	-1,81E-02
EP-terrestrial	mol N eq.	1,54E-03	8,17E-02	0,00E+00	-2,03E-01
POCP	kg NMVOC eq.	3,29E-04	1,40E-02	0,00E+00	-4,93E-02
ADP-minerals&metals*	kg Sb eq.	1,66E-08	3,23E-07	0,00E+00	-5,26E-06
ADP-fossil*	MJ	3,20E+00	6,13E+01	0,00E+00	-9,40E+02
WDP*	m <sup>3</sup>	1,14E-03	1,30E+01	0,00E+00	-5,53E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption				

### Results per Functional Unit 1 m<sup>3</sup> of INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT End of life 100% Landfill

Indicator	Unit	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	2,53E-01	0,00E+00	1,66E+00	0,00E+00
GWP-fossil	kg CO <sub>2</sub> eq.	2,50E-01	0,00E+00	1,66E+00	0,00E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	2,57E-03	0,00E+00	4,55E-03	0,00E+00
ODP	kg CFC 11 eq.	4,14E-14	0,00E+00	5,67E-12	0,00E+00
AP	mol H <sup>+</sup> eq.	3,62E-04	0,00E+00	9,90E-03	0,00E+00
EP-freshwater	kg P eq.	6,72E-07	0,00E+00	9,27E-04	0,00E+00
EP-marine	kg N eq.	1,48E-04	0,00E+00	2,14E-03	0,00E+00
EP-terrestrial	mol N eq.	1,54E-03	0,00E+00	2,34E-02	0,00E+00
POCP	kg NMVOC eq.	3,29E-04	0,00E+00	6,78E-03	0,00E+00
ADP-minerals&metals*	kg Sb eq.	1,66E-08	0,00E+00	1,13E-07	0,00E+00
ADP-fossil*	MJ	3,20E+00	0,00E+00	2,75E+01	0,00E+00
WDP*	m <sup>3</sup>	1,14E-03	0,00E+00	2,05E-01	0,00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption				

## Additional environmental information

INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT specifically designed to enhance energy efficiency in refrigeration and air conditioning systems, provides effective solutions to ensure proper insulation and minimize energy losses. However, the energy savings resulting from the high insulating performance of these products are not considered in this study.

NMC Poland are certified ISO 9001.

NMC has defined its sustainability strategy, keeping a foothold in the present and looking to the future. NMC has thus formalized a new set of guidelines that forms its group-wide sustainability strategy, embedded in the global business strategy. Sustainability goals have therefore been set for 2030, with three focus areas being circularity, decarbonisation, and empowerment.

<https://nmc.eu/en/downloads/corporate-identity>

To continue to reduce the environmental impact of the INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT we need to continue to increase our energy efficiency and the switch to more and more renewable energies. NMC is looking for further sources of renewable energy.

NMC are in addition actively looking for more sustainable sourcing and raw materials as well as more local suppliers to avoid long-distance transport as much as possible.

Scope of Declared Products and Correction Factors for Environmental Impact per Square Meter.

This Environmental Product Declaration (EPD) covers all references within the INSUL ROLL, INSUL ROLL XT, INSUL SHEET, and INSUL SHEET XT product lines, as listed in the dimensions table below.

To calculate the environmental impact per square meter for a specific reference, multiply the values provided in the results table by the corresponding conversion factor indicated in the correction factor table.

Product	Width (m)	Length (m)	Thickness (mm)	Weight (g/m <sup>2</sup> )	Conversion factor
INSUL-ROLL	1	40	3	165	0,0030
	1	20	6	330	0,0060
	1	15	9	495	0,0090
	1	15	10	550	0,0100
	1	11	13	715	0,0130
	1	9	16	880	0,0160
	1	8	19	1045	0,0190
	1	6	25	1375	0,0250
	1	4	32	1760	0,0320
	1	4	40	2200	0,0400
INSUL-ROLL XT	1	40	3	265	0,0048
	1	20	6	430	0,0078
	1	15	9	595	0,0108
	1	15	10	650	0,0118
	1	11	13	815	0,0148
	1	9	16	980	0,0178
	1	8	19	1145	0,0208
	1	6	25	1475	0,0268
	1	4	32	1860	0,0338
	1	4	40	2300	0,0418
INSUL-SHEET	0,5 to 1	2	6	330	0,0060
	0,5 to 1	2	9	495	0,0090
	0,5 to 1	2	10	550	0,0100
	0,5 to 1	2	13	715	0,0130
	0,5 to 1	2	16	880	0,0160
	0,5 to 1	2	19	1045	0,0190
	0,5 to 1	2	25	1375	0,0250
	0,5 to 1	2	32	1760	0,0320
	0,5 to 1	2	40	2200	0,0400
INSUL-SHEET XT	0,5 to 1	2	3	265	0,0048
	0,5 to 1	2	6	430	0,0078
	0,5 to 1	2	9	595	0,0108

	0,5 to 1	2	10	650	0,0118
	0,5 to 1	2	13	815	0,0148
	0,5 to 1	2	16	980	0,0178
	0,5 to 1	2	19	1145	0,0208
	0,5 to 1	2	25	1475	0,0268
	0,5 to 1	2	32	1860	0,0338

## Annex 1

Product range	DOP number	SCIP reference number	ADCA	MCCP
INSUL Roll xt	W4FEF800	bf7094af-3fa9-4083-ae0b-8e337ed0d1d6	•	•
INSUL Roll	W4FEF300	1624f293-7abd-47ad-8915-6f264c2520a6	•	•
INSUL Sheet	W4FEF301	68d38714-8a55-494c-89e9-75d043f0d049	•	•
INSUL Sheet xt	W4FEF802	803c421e-0d01-4a9b-9ef9-5855e9ea2556	•	•

## ABBREVIATIONS

Abbreviation	Definition
<b>General Abbreviations</b>	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared
JRC	Joint Research Centre (European Commission)
GWP	Global Warming Potential
GHG	Greenhouse gas
CF	Characterization factors

## References

### General Program Instructions for the International EPD<sup>®</sup> System. Version 5.0

PCR 2019:14 v2.0. Construction Product PCR (EN 15804: A2)

c-PCR-005 Thermal insulation products (EN 16783: 2024) Version: 2024-04-30

### EN 15804

EN 15804:2012-04 + A2 2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

### EN 16783

EN 16783:2024-04: Thermal insulation products - Environmental Product Declarations (EPD) - Product Category Rules (PCR) complementary to EN 15804 for factory made and in-situ formed products.

### ISO 14025

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

**ISO 14040:2006**

ISO 14040:2006: Environmental management — Life cycle assessment — Principles and framework

**ISO 14044:2006**

ISO 14044:2006: Environmental management — Life cycle assessment — Requirements and guidelines

**CEN/TR 15941:2010**

CEN/TR 15941:2010: Sustainability of construction works - Environmental product declarations - Methodology for selection and use of generic data.

**ISO 9001:2015**

Quality management systems.

**ISO 14001:2015**

Environmental management systems.

**EN 1602: 2013**

EN 1602: 2013: Thermal insulating products for building applications. Determination of the apparent density

**ISO 845:2006**

ISO 845:2006: Cellular plastics and rubbers — Determination of apparent density

**ISO 2896:2001**

ISO 2896:2001: Rigid cellular plastics — Determination of water absorption

**ISO 1798:2008**

ISO 1798:2008: Flexible cellular polymeric materials — Determination of tensile strength and elongation at break

**EN 16354:2019**

Laminate floor coverings - Underlays - Specification, requirements, and test methods

**EN 12664:2001**

Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance

**ISO 8301:1991**

Thermal insulation — Determination of steady-state thermal resistance and related properties — Heat flow meter apparatus

**DIN ISO 2896:1999-11**

Rigid cellular plastics — Determination of water absorption

**EN ISO 12667**

EN ISO 12667: Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance

**EN 13501-1**

EN 13501-1: Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

**EN 14706:2012**

EN 14706:2012: Thermal insulating products for building equipment and industrial installations - Determination of maximum service temperature

**EN 13469:2012**

EN 13469:2012: Thermal insulating products for building equipment and industrial installations - Determination of water vapour transmission properties of preformed pipe insulation

**EN 1602: 2013**

EN 1602: 2013: Thermal insulating products for building applications - Determination of the apparent density

**EN 13468:2001**

EN 13468:2001: Thermal insulating products for building equipment and industrial installations - Determination of trace quantities of water-soluble chloride, fluoride, silicate, sodium ions and pH

**Sphera LCA for Experts**

Sphera LCA for Experts 10.9 (GaBi) LCA for Experts Software-System and Database for Life Cycle Engineering Copyright © 1992-2023 Sphera Solutions Gmbh Version: 10.9.1.28 DB Schema 8007

**Sphera**

Sphera Solutions Gmbh. LCA for Experts 10 LCI documentation. GaBi Databases (sphera.com) + ecoinvent integrated v3.9 database Stuttgart, Echterdingen: Sphera Solutions Gmbh.

**Eurostat**

European Statistics: Recovery rates for packaging wastepaper and cardboard packaging for the European Union 27 countries 2014 <http://ec.europa.eu/eurostat/home>

**CEN/TS 16516:2013**

CEN TS 16516/, AgBB/, /ISO 16000-3/, /ISO 16000-6/, /ISO16000-9/, /ISO 16000-11/ Construction products. Assessment of release of dangerous substances. Determination of emissions into indoor air

## VERSION HISTORY

**Original Version of the EPD, 2025-12-03**

