

URSA mineral wool products manufactured in Dąbrowa Górnicza



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Manufacturer:

URSA Polska Sp. z o.o.

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Basic information

This declaration is the type III Environmental Product Declaration (EPD) based on EN 15804 and verified according to ISO 14025 by external auditor. It contains the information on the impacts of declared construction materials on environment and their aspects verified by the independent Body according to ISO 14025. Basically, a comparison or evaluation of EPD data is possible only if all the compared data were created according to EN 15804 (see point 5.3 of the standard).

Life cycle: A1-A3 modules in accordance with EN 15804 (Cradle to Gate)

The year of preparing the EPD: 2019

Declared durability: Under normal conditions, mineral wool products are expected to last the service life of a building (30 years)

Product standard: PN-EN 13162+A1:2015-04 - Thermal insulation products for buildings - Factory made mineral wool (MW) products - Specification

PCR: EN 16783:2017, PCR A (PCR based on EN 15804)

Declared unit: 1 tonne

Reasons for performing LCA: B2B

Representativeness: Polish product

Manufacturer and Product Information

URSA offers glass mineral wool insulation materials to cover different building applications. URSA invests time and resources and uses state of the art technology to innovate and offer its customers insulation solutions for buildings that work and last.

URSA GLASSWOOL is a high-quality mineral wool with thermal and acoustic insulation properties.

URSA GLASSWOOL is also fire resistant, making it ideal for safe thermal and sound insulation of pitch roofs, partitions, external walls and ceiling.

Application

URSA GLASSWOOL is a product for application in terms of thermal insulation especially to be applied as an insulation of pitch roof, attic, cold roof, external wall, internal walls, floors, internal sound absorbers. Produced with etched lines which make it easy to cut. Non-combustible, soundproof, vapor permeable, compressed, resistant to molds and fungi, made of elastic fibers - the material effectively wedges between rafters without mechanical application depending on the spacing of the rafters.

Good insulation properties of wool keep heat in room during winter and provide pleasant cold during the heat period. URSA GLASSWOOL protects also against unwanted noise, and as a non-flammable material, class A reaction to fire (euroclass) A1, effectively reduces the risk of fire.

URSA mineral glass wool rolls, slabs, tapes and granulate produced in Dąbrowa Górnicza factory cover 100% of whole factory production in analyzed period.

Distinguishing features of mineral wool products

Glass wool mostly produced with products coming from recycling (recovery) contains most important insulation features:

- durability and dimensional stability,
- constancy of insulation properties.

Additional features:

- fire resistance (euroclass A1),
- compression capability,
- low weight,
- ease of transport and storage,
- ease of use,
- no resistance to permeating water vapor.

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Allocation

The allocation rules used for this EPD are based on general ITB-PCR A and EN 16783. The mineral glass wool production is a line process with multiple co-products in one factory in Dąbrowa Górnicza.

All impacts from raw materials extraction are allocated in A1 module of EPD. 100% of impacts from line production were inventoried and allocated to whole glass wool production. Municipal waste and waste water of whole factory were allocated to module A3. Electricity was inventoried for whole production process. Emissions are measured separately as well and presented in A3 module.

System limits

The life cycle analysis of the examined products covers "Product Stage", A1-A3 modules (Cradle to Gate) in accordance with EN 15804+A1 and ITB-PCR A. Details on systems limits are provided in product specific report. All materials and energy consumption inventoried in factory were included in calculation. Office impacts were also taken into consideration. In the assessment, all significant parameters from gathered production data are considered, i.e. all material used per formulation, utilised thermal energy, internal fuel and electric power consumption, direct production waste, and all available emission measurements. This study also takes into account some material flows of less than 1% and energy flows with a proportion of less than 1 %. It can be assumed that the total sum of omitted processes does not exceed 5% of all impact categories. In accordance with EN 15804, machines and facilities (capital goods) required for and during production are excluded, as is transportation of employees.

A1 and A2 Modules: Raw materials supply and transport

A1 module includes 95,8% of raw materials used in production of mineral wool. Crucial ingredient – cullet, which accounts for nearly 64% of total sum of raw materials, comes from recycling. Wooden pallets (4,06%) are constantly reused, so are not taken into calculations. The rest of raw materials (0,14%) were also not taken into calculations as products with no significant role during production process. Raw materials for glass wool production come from local suppliers and from more distant locations. Data on transport of the different products to the manufacturing plants is collected and modelled for factory by assessor. Means of transport include truck, train and ship, and Polish and European fuel averages are applied.

A3: Production

The figure 1 show the working process during the production of URSA GLASSWOOL. The raw materials are measured and sent to a melting furnace. In the process of glass wool production the raw materials are sand, limestone and soda ash, as well as recycled cullet and off-cuts from the production process. Recycled content in URSA factory in Dąbrowa Górnicza accounts for up to 64% in the mass basis. The reuse of off-cuts and recycled materials has helped to steadily reduce the environmental impact due to raw materials extraction and energy input required to produce glass wool.

Furnace

The raw materials are melted in a furnace at very high temperatures, typically between 1,300°C to 1,500°C. The smoke created during this process is filtered and flue gases are cleaned to minimize any environmental impact.

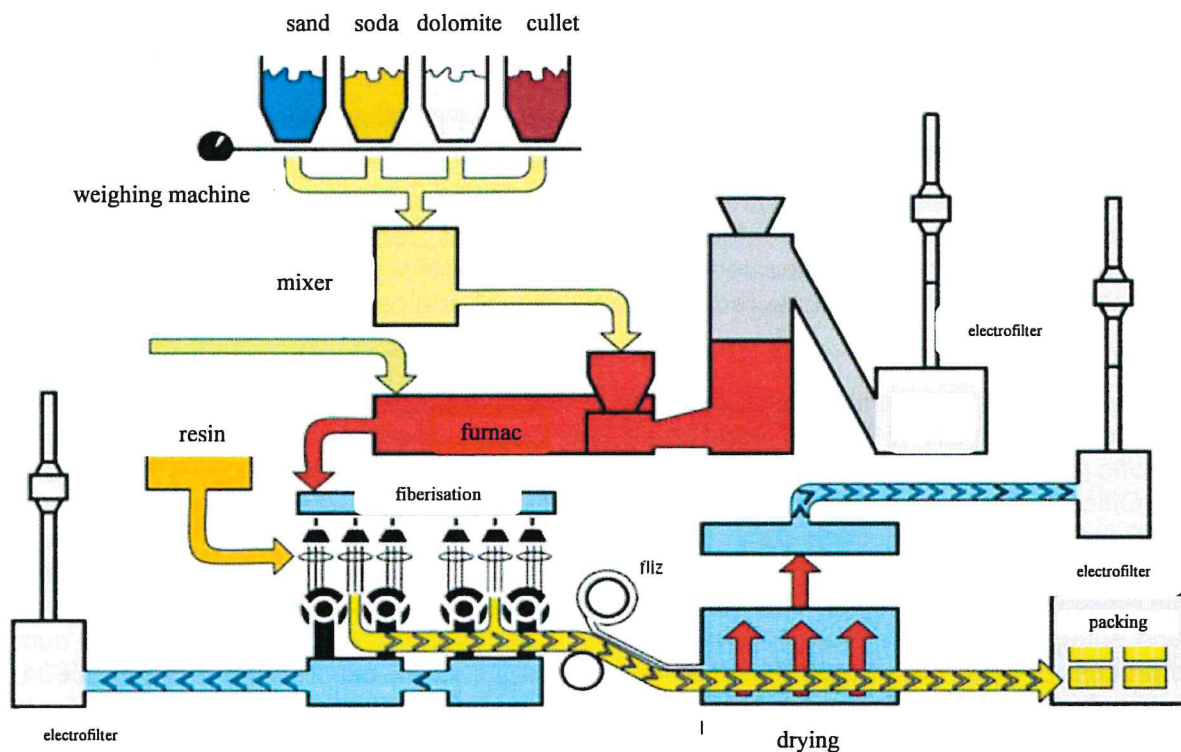


Figure. 1 Production scheme for URSA GLASSWOOL

Spinning

The droplets of melt exiting the furnace are spun into fibers. Droplets fall onto rapidly rotating flywheels or the mixture is drawn through tiny holes in rapidly rotating spinners. This process shapes it into fibers.

Binding

Small quantities of binding agents - resin are added to the fibers. The structure and density of the product will be adapted according to its final usage.

Curing

The mineral wool is then hardened in a curing oven at around 200°C.

Cutting

The mineral wool is cut to the required size and shape into rolls, batts, boards or it can be customized for use with other products. Off-cuts and other mineral wool scraps are recycled back into the production process, which further reduces inputs and energy requirements.

Packaging

Mineral wool is compressed during packaging to reduce its volume. This makes it easier to handle and results in lower carbon emissions due to transportation.

Gases and waste

Gases emitted during the production process are cleaned in filters and after-burners to minimize the environmental impact. Water use in the process is generally confined to closed circuit systems. This has the twofold advantage of reducing fresh water consumption and avoiding the discharge of dirty or polluted water.

Data collection period

The data for manufacture of the examined products refer to period between dates 01.09.2017-31.08.2018. The life cycle assessments were prepared for locations in Poland as reference area.

Data quality

The values determined to calculate the LCA originate from verified URSA Polska Sp. z o.o. inventory data.

Assumptions and estimates

The impacts of the representative URSA products for each glass wool product were aggregated using weighted average. The weighted average method was used according to the percentage of each product in glass wool based on the relation to whole production quantity. Impacts were inventoried and calculated for all products in glass wool product group.

Calculation rules

LCA was done in accordance to PCR A and EN 16783 document.

Databases

The data for the processes come from the following databases: Ecoinvent, Ullmann's, ITB-Data. Specific data quality analysis was a part of external ISO 14001 audit. Characterization factors are CML ver. 4.2 based on EN 15804:2013+A1 version. (PN-EN 15804+A1:2014-04)

LIFE CYCLE ASSESSMENT (LCA) - Results

Declared unit

The declaration refers to functional unit (FU) - 1 tonne of URSA mineral wool products manufactured in Dąbrowa Górnicza.

Table 2. System boundaries for environmental characteristic for URSA GLASSWOOL

Environmental assessment information (MNA – Module not assessed, MD – Module Declared, INA – Indicator Not Assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
MD	MD	MD	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MNA

URSA mineral wool products manufactured in Dąbrowa Górnicza

Environmental impacts: (FU – 1 tonne)					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.] (100 years)	569,47	47,01	936,77	1553,25
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	6,58E-05	0	0	6,58E-05
Acidification potential of soil and water	[kg SO ₂ eq.]	2,38E+00	3,17E-01	5,05E+00	7,75E+00
Formation potential of tropospheric ozone	[kg Ethene eq.]	1,40E-01	2,45E-02	5,63E-02	2,21E-01
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	1,78E+00	4,50E-05	8,59E-01	2,64E+00
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	4,34E-01	0	3,47E-03	4,37E-01
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	8499,14	519,55	12584,54	21603,22
Environmental aspects on resource use: (FU – 1 tonne)					
Indicator	Unit				
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	1,97E+03	6,91E-01	4,77E+02	2,45E+03
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	[MJ]	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	[MJ]	9420,831	571,502	13842,992	23835,32
Use of secondary material	[kg]	63,90	0	8,34	7,22E+01
Use of renewable secondary fuels	[MJ]	INA	INA	INA	INA
Use of non-renewable secondary fuels	[MJ]	INA	INA	INA	INA
Net use of fresh water	[dm ³]	281,76	49,36	1761,86	2092,98
Other environmental information describing waste categories: (FU – 1 tonne)					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	3,47E-02	1,12E-03	2,41E-02	5,99E-02
Non-hazardous waste disposed	[kg]	6,29E+01	3,04E+01	1,42E+00	9,47E+01
Radioactive waste disposed	[kg]	0	0	0	0
Components for re-use	[kg]	0,00E+00	0	2,59E-01	2,59E-01
Materials for recycling	[kg]	0,00E+00	0	1,27E-02	1,27E-02

Verification

The process of verification of this EPD is in accordance with EN ISO 14025 and ISO 21930. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly.

The basis for LCA analysis was EN 15804 and ITB PCR A and EN 16783	
Independent verification corresponding to ISO 14025 (subclause 8.1.3)	
☒ external	☐ internal
External verification of EPD: PhD. Eng. Halina Prejzner	
LCA, LCI audit and input data verification: M.Sc. Eng. Dominik Bekierski, d.bekierski@itb.pl	
Verification of LCA: PhD Eng. Michał Piasecki, m.piasecki@itb.pl	

Normative references

- ITB PCR A- General Product Category Rules for Construction Products
- EN 16783:2017 Thermal insulation products - Product category rules (PCR) for factory made and in-situ formed products for preparing environmental product declarations
- ISO 14025:2006 Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services
- ISO 14044:2006, Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 15686-1:2011 Buildings and constructed assets -- Service life planning -- Part 1: General principles and framework
- ISO 15686-8:2008 Buildings and constructed assets -- Service-life planning -- Part 8: Reference service life and service-life estimation
- EN 15804:2012+A1:2013 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- EN 15942:2011 Sustainability of construction works - Environmental product declarations - Communication format business-to-business



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CERTIFICATE No 085/2019

of TYPE III ENVIRONMENTAL DECLARATION

Product:

Mineral wool products
manufactured in Dąbrowa Górnicza

Manufacturer:

URSA Polska sp. z o.o.
Armii Krajowej 12, 42-520 Dąbrowa Górnicza, Poland

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

PN-EN 15804+A1:2014-04

Sustainability of construction works.
Environmental product declarations.
Core rules for the product category of construction products.

This certificate, issued for the first time on 10th April 2019 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics
and Environment Department



Michał Piasecki, PhD



Deputy Director
for Research and Innovation



Krzysztof Kuczyński, PhD

Warsaw, April 2019