DOLINA NIDY

ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025:2010
and PN-EN 15804:2012

GYPSUM PLASTERS BASED ON FGD GYPSUM

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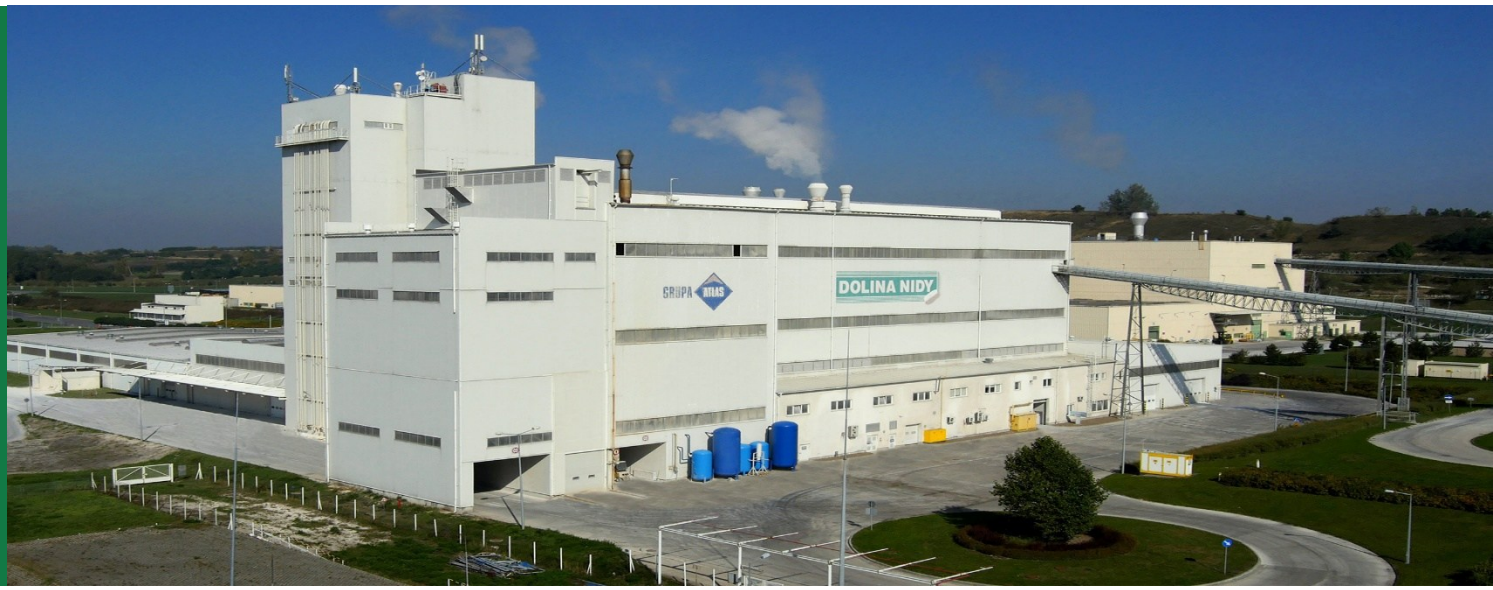

MANUFACTURER:

DOLINA NIDY sp. z o.o.
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Manufacturing sites information

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ENVIRONMENTAL PRODUCT DECLARATION

GYPSUM PLASTERS BASED ON FGD GYPSUM

in accordance with ISO 14025:2010 and PN-EN 15804:2012

BASIC INFORMATION

This declaration is the type III Environmental Product Declaration (EPD) based on EN 15804 and verified according to ISO 14025. It contains information about the impact of the declared construction materials on the environment and their aspects. A comparison or evaluation of EPD data is only possible if all the compared data was created according to EN 15804 (see point 5.3 of the standard) and within the building context.

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

The year of data for EPD: 2024

Product standard: PN-EN 13279-1

Service Life: under normal conditions, gypsum plaster has an expected service life well in excess of 50 years

Declared unit: 1 kg

Reasons for performing LCA: B2B

Representativeness: Polish product

Issuance date: 12.02.2025

Validation date: 12.02.2025

Validity date: 12.02.2030

MANUFACTURER

The Gypsum Industry Company Dolina Nidy was established in 1952. Since 2000, Dolina Nidy sp. z o.o. has belonged to Atlas Group, the Polish manufacturer of construction chemicals. The company offers gypsum binders, projection or manual gypsum plasters, different types of finishing coats, adhesives for plasterboard, and gypsum used in mining. Dolina Nidy is a manufacturer of gypsum plasters intended for plastering internal walls and ceilings. These plasters are based on FGD (synthetic) gypsum, which is a by-product in the process of desulfurization of fumes in a power plant. The following products are offered by the manufacturer depending on the customer's needs:

- Tynk gipsowy maszynowy lekki plus ALFA,
- Tynk gipsowy ręczny GAMMA,
- Tynk gipsowy maszynowy o zwiększonej twardości powierzchni ZETA,
- Tynk gipsowy maszynowy o zwiększonej wodoodporności ZETA HYDRO.

FGD gypsum is a synthetic product derived from flue gas desulfurization systems at electric power plants. FGD gypsum is an inert, non-toxic material, harmless to human life in its natural state. It has a Radiation Hygiene Certificate and was registered in 2010 in accordance with REACH Regulation (EC) No 1907/2006 (registration number 01-2119444918-26-0138).
Dolina Nidy has implemented and maintains a Quality and Environmental Management System, which fulfills the requirements of the following standards:

- ISO 9001:2008 and ISO 14001:2004 + Cor1:2009 (registration number 255019 QM08/UM),
- Occupational Health and Safety Management System PN-N-18001:2004 (registration number 255019 OH/PL).

Scope of certificates: Formula design, production and sale of gypsum binder and dry mix gypsum. Certification body DQS-PSA accreditation number AC 087, Deutsche Akkreditie-rungsstelle D-ZM16074-01-00.

Since 2007, Dolina Nidy has implemented the European Eco-Management and Audit Scheme (EMAS), which sets additional requirements related to the active involvement of employees, adaption of undertaken actions to legal regulations, transparency of undertaken actions and obtained results, as well as dialogue with the community. EMAS registration number PL 2.26-001-8.

Figure 1. Dolina Nidy gypsum plasters.

ENVIRONMENTAL PRODUCT DECLARATION

GYPSUM PLASTERS BASED ON FGD GYPSUM

in accordance with ISO 14025:2010 and PN-EN 15804:2012

DOLINA NIDY

PRODUCT DESCRIPTION AND APPLICATION

Gypsum plasters are produced in accordance with standard PN-EN 13279-1:2009. They are ready for internal use as a one-coat plaster system. Depending on the application, there are distinguished projection and manual plasters. Projection plasters are formulated for mechanical application, mixed with water to the required consistency and applied by the projection machine to the background. Manual plasters are formulated for manual application, batch mixed with water to the required consistency and applied manually to the background.

Table 1. General formulation of gypsum plasters.

Components	% of mass
Gypsum binder	60÷65
Limestone filler	30÷35
Hydrated lime	1÷3
Expanded perlite	1÷3
Additives	< 0.5%

Table 2. Characteristic of gypsum plasters.

Description	Dry mortar, gypsum based plaster blended at the factory that requires only mixing with a required quantity of water.
Destination	For interior use only, on mineral walls and ceilings made of: concrete, lightweight concrete, ceramic and lime-sand block and brick.
Components	Gypsum hemihydrates, mineral fillers (calcium, dolomite and perlite), hydrated lime, chemical additives.
Package	20 or 30 kg paper bags and silo system
Colour	Yellow

Tynk Gipsowy maszynowy lekki plus ALFA, Tynk gipsowy ręczny GAMMA, Tynk gipsowy maszynowy o zwiększonej twardości powierzchni ZETA and Tynk gipsowy maszynowy o zwiększonej wodoodporności ZETA HYDRO are one-coat, interior use, gypsum based plasters, designed for machine or manual application. The plasters after applying, finishing and drying give a protective and decorative layer for walls and ceilings. The gypsum plasters may provide a background for decorative elements or a smooth surface directly before painting or wallpapering.

Table 3. Application of gypsum plasters.

Standard designation	Type of application	Trade name
Lightweight gypsum building plaster	Projection gypsum plaster	Tynk gipsowy maszynowy lekki plus ALFA
Gypsum building plaster	Manual gypsum plaster	Tynk gipsowy ręczny GAMMA
Gypsum plaster for plasterwork with enhanced surface hardness	Projection gypsum plaster	Tynk gipsowy maszynowy o zwiększonej twardości powierzchni ZETA
Gypsum plaster for plasterwork with enhanced water reststance	Projection gypsum plaster	Tynk gipsowy maszynowy o zwiększonej wodoodporności ZETA HYDRO

TECHNICAL PARAMETERS

Technical parameters of the gypsum plasters: ALFA, GAMMA, ZETA and ZETA HYDRO are listed in tables 4 – 7.

Table 4. Characteristic of Tynk gipsowy maszynowy lekki plus ALFA.

Trade name	Tynk gipsowy maszynowy lekki plus ALFA
Standard designation	B4/50/2 – PN-EN 13279-1:2009
CE number	EC 26/1/CPR
Gypsum binder content	≥ 60 %
Adhesive strength	≥ 0.1 N/mm^2
Compressive strength	≥ 3.0 N/mm^2
Flexural strength	≥ 1.0 N/mm^2
Thermal conductivity	< 0,2 W/(m·K)
Bulk density	800 kg/m^3

Dry density	900 kg/m^3
Yield	130 dm^3/100 kg
Coat thickness	8-30 mm
Reaction to fire	A1
Product reference documents	Declaration of conformity no EC 26/1/CPR, Hygienic Certificate no BK-60211-0077/20, Technical Data Sheet, Material Safety Data Sheet

Table 5. Characteristic of Tynk gipsowy ręczny GAMMA.

Trade name	Tynk gipsowy ręczny GAMMA
Standard designation	B1/20/2- PN-EN 13279-1:2009
CE number	EC 25/1/CPR
Gypsum binder content	≥ 60 %
Adhesive strength	≥ 0.3 N/mm^2
Compressive strength	≥ 3.0 N/mm^2
Flexural strength	≥ 1.5 N/mm^2
Bulk density	800 kg/m^3
Dry density	950 kg/m^3
Yield	120 dm^3/100 kg
Coat thickness	8-30 mm
Reaction to fire	A1
Product reference documents	Declaration of conformity no EC 25/1/CPR, Hygienic Certificate no B-BK-60211-0077/20, Technical Data Sheet, Material Safety Data Sheet

Table 6. Characteristic of Tynk gipsowy maszynowy o zwiększonej twardości powierzchni ZETA.

Trade name	Tynk gipsowy maszynowy o zwiększonej twardości powierzchni ZETA
Standard designation	B7/50/6- PN-EN 13279-1:2009
CE number	EC 28/2/CPR
Gypsum binder content	≥ 60 %
Adhesive strength	≥ 0.1 N/mm^2
Compressive strength	≥ 6.0 N/mm^2
Flexural strength	≥ 2.0 N/mm^2
Surface hardness	12.0 N/mm^2
Thermal conductivity	< 0,27 W/(m·K)
Bulk density	1000 kg/m^3
Dry density	1100 kg/m^3
Yield	110 dm^3/100 kg
Coat thickness	8-30 mm
Reaction to fire	A1
Product reference documents	Declaration of conformity no EC 28/2/CPR, Hygienic Certificate no B.BK.60111.0458.2022, Technical Data Sheet, Material Safety Data Sheet

Table 7. Characteristic of Tynk gipsowy maszynowy o zwiększonej wodoodporności ZETA HYDRO.

Trade name	Tynk gipsowy maszynowy o zwiększonej wodoodporności ZETA HYDRO
Standard designation	B7/50/6- PN-EN 13279:2009
CE number	EC 29/1/CPR
Gypsum binder content	≥ 60 %
Adhesive strength	≥ 0.3 N/mm^2
Compressive strength	≥ 4.0 N/mm^2
Flexural strength	≥ 1.5 N/mm^2
Surface hardness	≥ 8.0 N/mm^2
Thermal conductivity	0.39 W/(m·K)
Yield	110 dm^3/100 kg
Coat thickness	10-30 mm
Reaction to fire	A1
Product reference documents	Declaration of conformity no EC 29/1/CPR, Hygienic Certificate no B-BK-60211-0844/20, Technical Data Sheet, Material Safety Data Sheet

LIFE CYCLE ASSESSMENT (LCA) – GENERAL RULES APPLIED

Allocation

Production of the gypsum plasters is a line process in two production plants of Dolina Nidy in Leszcze and Konin (Poland). Allocation was done on product mass basis. All impacts from raw materials extraction are allocated in A1 module of the EPD (including materials and energy consumption, transportation, emissions and

wastes resulting from the production of the gypsum plasters). 100% of impacts from line production of Dolina Nidy were inventoried and were allocated to the gypsum plasters production. Municipal waste and waste water of Leszcze and Konin factories were allocated to module A3. Energy supply was inventoried for whole production processes. Emissions in the factories were measured and were allocated to module A3.

System limits

The life cycle analysis of the declared products covers “Product Stage”, A1-A3 modules (Cradle to Gate) in accordance with EN 15804+A1. The details of systems limits are provided in product technical report. All materials and energy consumption inventoried in factories and were included in calculation. In the assessment, all significant parameters from gathered production data are considered, i.e. all material used per formulation, utilized thermal energy, internal fuel and electric power consumption, direct production waste, and all available emission measurements. It can be assumed that the total sum of omitted processes does not exceed 5% of all impact categories. In accordance with EN 15804+A1, 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

Raw materials such as FGD gypsum, limestone, perlite and lime used in the production process come from local suppliers while additives and packaging materials originate from more distant suppliers. Data on the transport of different products to the manufacturing plants is collected and modeled for the factory by the assessor. Means of transport include trucks and Polish and European fuel averages are applied.

A3: Production

- **Production plant LESZCZE**

The production plant in Leszcze, built between 2003 and 2007, is a modern, fully automated complex. The factory manufactures gypsum binders using synthetic REA gypsum derived as a by-product from the flue gas desulfurization process in power plants.

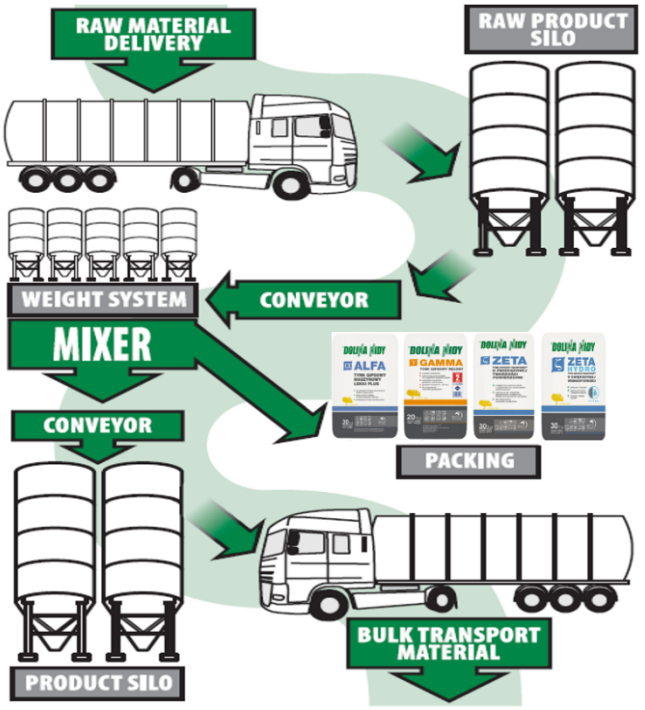

Figure 2. Production process - dry mixes (scheme).

Synthetic hemihydrate gypsum is produced through the partial dehydration of dihydrate gypsum (FGD gypsum) during the calcination process. The raw material, REA gypsum, is dried to reduce its moisture content. Then, it is fed into a rotary calciner, where it is exposed to high temperatures, typically around 180°C. This heat treatment removes part of the crystalline water from the gypsum, converting calcium sulfate dihydrate ($CaSO_4 \cdot 2H_2O$) into calcium sulfate hemihydrate ($CaSO_4 \cdot 0.5H_2O$).

The process is continuous and carefully controlled to ensure a consistent quality of the product. The calcined gypsum is cooled in a counterflow cooling system, where ambient or preheated air is used to

bring the temperature down while preserving the structural integrity of the material. Finally, the cooled hemihydrate gypsum is transported to storage silos and pneumatically transported to the mixing plant subsequently. In the mixing plant - depending on the binder type - gypsum is blended in the mixer with different mineral fillers and chemical compounds. After quality control, final products are placed into paper bags or loaded into a silo system.

- **Production plant KONIN**

Gypsum Processing Plant in Konin was built in 2009. The factory produces gypsum binders based on FGD (synthetic) raw material, obtained as by-product in the process of desulfurization of fumes in a power plant. As a heating agent in the calcination process, a saturated water vapour from a power plant is used. It is the only installation of this type in Poland. This innovative process of gypsum calcination provides no emission of CO_2, NO_x, SO_x and combustion dust. Moreover usage of the synthetic gypsum (waste material) leads to reduction of natural resources consumption.

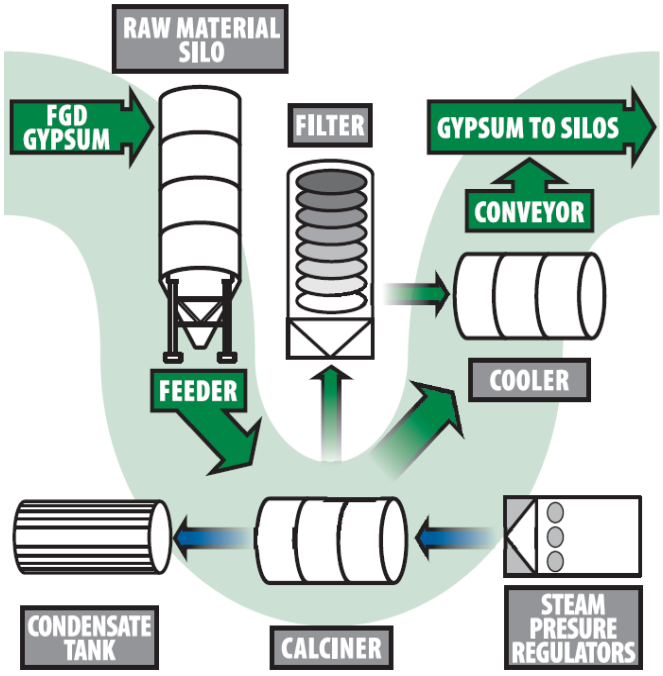

Figure 3. Calcination process - binders based on FGD gypsum.

The Konin plant consists of a gypsum calcination plant, a mixing plant, a packing line, and a palletizing line. The raw material is transported directly through a converted belt conveyor to a calcination plant, where is heat treated. Gypsum binder is transported from calcinator to silos and next to mixing plant.

Data collection period

The data for the production of the declared products refer to period between 01.01.2024 – 31.12.2024 (1 year). The life cycle assessments were prepared for Poland as reference area.

Data quality

The values determined to calculate the LCA originate from verified Dolina Nidy sp. z o.o. inventory data.

Assumptions and estimates

The impacts of the representative gypsum plasters were aggregated using weighted average. Impacts were inventoried and calculated for all products of the gypsum plasters.

Databases

The data for the processes come from the following databases: Ecoinvent v.3.5, specific EPDs, ELCD, Ullmann's. 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 kg of the gypsum plasters manufactured by Dolina Nidy sp. z o.o.

Table 8. System boundaries for the environmental characteristic of the gypsum plasters.

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 MD	A2 MD	A3 MD	A4 MNA	A5 MNA	B1 MNA	B2 MNA	B3 MNA	B4 MNA	B5 MNA	B6 MNA	B7 MNA	C1 MNA	C2 MNA	C3 MNA	C4 MNA	D MNA

ALFA gypsum plaster (unpacked, Konin)

Environmental impacts: (FU) 1 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
Global warming potential	[kg CO_2 eq.]	5.80E-02	7.45E-03	1.89E-03	6.73E-02
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	8.67E-09	0.00E+00	0.00E+00	8.67E-09
Acidification potential of soil and water	[kg SO_2 eq.]	1.72E-04	5.44E-05	0.00E+00	2.26E-04
Formation potential of tropospheric ozone	[kg Ethene eq.]	1.90E-05	9.60E-06	0.00E+00	2.86E-05
Eutrophication potential	[kg $(PO_4)^{3-}$ eq.]	3.60E-06	3.97E-06	0.00E+00	7.57E-06
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	3.23E-04	0.00E+00	7.00E-09	3.23E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	6.13E-01	4.91E-02	1.95E-02	6.73E-02
Environmental aspects on resource use: (FU) 1 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
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]	8.71E-01	3.44E-03	1.33E-03	8.76E-01
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]	6.77E-01	5.16E-02	2.05E-02	7.49E-01
Use of secondary material	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Use of renewable secondary fuels	[MJ]	0.00E+00	2.58E-03	0.00E+00	2.58E-03
Use of non-renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	[m^3]	INA	INA	INA	INA
Other environmental information describing waste categories: (FU) 1 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
Hazardous waste disposed	[kg]	5.59E-09	1.41E-07	0.00E+00	1.47E-07
Non-hazardous waste disposed	[kg]	3.10E-03	1.31E-04	5.16E-05	3.28E-03
Radioactive waste disposed	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Components for re-use	[kg]	0.00E+00	0.00E+00	1.42E-03	1.42E-03
Materials for recycling	[kg]	9.86E-06	0.00E+00	1.16E-04	1.26E-04
Materials for energy recover	[kg]	0.00E+00	0.00E+00	3.17E-05	3.17E-05
Exported energy	[MJ per energy carrier]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ALFA gypsum plaster (packed, Konin)

Environmental impacts: (FU) 1 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
Global warming potential	[kg CO_2 eq.]	7.20E-02	6.52E-03	1.89E-03	8.04E-02
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	9.12E-09	0.00E+00	0.00E+00	9.12E-09
Acidification potential of soil and water	[kg SO_2 eq.]	2.27E-04	4.76E-05	0.00E+00	2.75E-04
Formation potential of tropospheric ozone	[kg Ethene eq.]	2.61E-05	8.39E-06	0.00E+00	3.45E-05
Eutrophication potential	[kg $(PO_4)^{3-}$ eq.]	1.09E-05	3.47E-06	0.00E+00	1.44E-05
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	3.77E-04	0.00E+00	7.00E-09	3.77E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	6.79E-01	4.52E-02	1.95E-02	7.44E-01
Environmental aspects on resource use: (FU) 1 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
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]	8.71E-01	3.17E-03	1.33E-03	8.76E-01
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]	6.90E-01	4.75E-02	2.05E-02	7.58E-01
Use of secondary material	[kg]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Use of renewable secondary fuels	[MJ]	3.00E-03	2.38E-03	0.00E+00	5.38E-03

Use of non-renewable secondary fuels	[MJ]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Net use of fresh water	[m^3]	INA	INA	INA	INA

Other environmental information describing waste categories: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	5.59E-09	7.72E-08	0.00E+00	8.28E-08
Non-hazardous waste disposed	[kg]	3.10E-03	7.17E-05	5.16E-05	3.22E-03
Radioactive waste disposed	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Components for re-use	[kg]	0.00E+00	0.00E+00	1.42E-03	1.42E-03
Materials for recycling	[kg]	9.86E-06	0.00E+00	1.16E-04	1.26E-04
Materials for energy recover	[kg]	0.00E+00	0.00E+00	3.17E-05	3.17E-05
Exported energy	[MJ per energy carrier]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ALFA gypsum plaster (unpacked, Leszcze)

Environmental impacts: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO_2 eq.]	5.80E-02	2.00E-03	1.32E-02	7.32E-02
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	8.67E-09	0.00E+00	0.00E+00	8.67E-09
Acidification potential of soil and water	[kg SO_2 eq.]	1.72E-04	1.46E-05	0.00E+00	1.87E-04
Formation potential of tropospheric ozone	[kg Ethene eq.]	1.90E-05	2.57E-06	0.00E+00	2.16E-05
Eutrophication potential	[kg $(PO_4)^{3-}$ eq.]	3.60E-06	1.06E-06	0.00E+00	4.66E-06
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	3.23E-04	0.00E+00	4.88E-08	3.23E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	6.12E-01	1.33E-02	1.36E-01	7.61E-01

Environmental aspects on resource use: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
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]	6.10E-02	9.33E-04	9.95E-03	7.19E-02
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]	6.77E-01	1.40E-02	1.42E-01	8.33E-01
Use of secondary material	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	[MJ]	0.00E+00	7.00E-04	0.00E+00	7.00E-04
Use of non-renewable secondary fuels	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	[m^3]	INA	INA	INA	INA

Other environmental information describing waste categories: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	5.58E-09	1.15E-08	2.37E-09	1.94E-08
Non-hazardous waste disposed	[kg]	3.08E-03	1.07E-05	4.67E-06	3.10E-03
Radioactive waste disposed	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	[kg]	9.70E-06	0.00E+00	3.91E-09	9.70E-06
Materials for energy recover	[kg]	0.00E+00	0.00E+00	1.52E-07	1.52E-07
Exported energy	[MJ per energy carrier]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ALFA gypsum plaster (packed, Leszcze)

Environmental impacts: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO_2 eq.]	7.20E-02	2.14E-03	1.32E-02	8.73E-02
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	9.12E-09	0.00E+00	0.00E+00	9.12E-09
Acidification potential of soil and water	[kg SO_2 eq.]	2.26E-04	1.56E-05	0.00E+00	2.42E-04
Formation potential of tropospheric ozone	[kg Ethene eq.]	2.61E-05	2.75E-06	0.00E+00	2.89E-05
Eutrophication potential	[kg $(PO_4)^{3-}$ eq.]	1.09E-05	1.14E-06	0.00E+00	1.20E-05
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	3.77E-04	0.00E+00	4.88E-08	3.77E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	6.78E-01	1.58E-02	1.36E-01	8.29E-01

Environmental aspects on resource use: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
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]	6.10E-02	1.10E-03	9.95E-03	7.21E-02
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]	6.89E-01	1.66E-02	1.42E-01	8.48E-01
Use of secondary material	[kg]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Use of renewable secondary fuels	[MJ]	3.00E-03	8.28E-04	0.00E+00	3.83E-03
Use of non-renewable secondary fuels	[MJ]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Net use of fresh water	[m^3]	INA	INA	INA	INA

Other environmental information describing waste categories: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3

Hazardous waste disposed	[kg]	5.58E-09	1.67E-08	2.37E-09	2.47E-08
Non-hazardous waste disposed	[kg]	3.08E-03	1.55E-05	4.67E-06	3.10E-03
Radioactive waste disposed	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	[kg]	9.70E-06	0.00E+00	3.91E-09	9.70E-06
Materials for energy recover	[kg]	0.00E+00	0.00E+00	1.52E-07	1.52E-07
Exported energy	[MJ per energy carrier]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

GAMMA gypsum plaster (packed, Leszcze)

Environmental impacts: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO_2 eq.]	8.20E-02	2.24E-03	1.32E-02	9.74E-02
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	1.12E-08	0.00E+00	0.00E+00	1.12E-08
Acidification potential of soil and water	[kg SO_2 eq.]	2.54E-04	1.64E-05	0.00E+00	2.70E-04
Formation potential of tropospheric ozone	[kg Ethene eq.]	2.86E-05	2.89E-06	0.00E+00	3.15E-05
Eutrophication potential	[kg $(PO_4)^{3-}$ eq.]	1.09E-05	1.19E-06	0.00E+00	1.21E-05
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	4.45E-04	0.00E+00	4.88E-08	4.45E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	8.20E-01	1.67E-02	1.36E-01	9.72E-01

Environmental aspects on resource use: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
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]	8.20E-02	1.17E-03	9.95E-03	9.31E-02
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]	8.45E-01	1.75E-02	1.42E-01	1.00E+00
Use of secondary material	[kg]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Use of renewable secondary fuels	[MJ]	3.00E-03	8.75E-04	0.00E+00	3.87E-03
Use of non-renewable secondary fuels	[MJ]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Net use of fresh water	[m^3]	INA	INA	INA	INA

Other environmental information describing waste categories: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	5.06E-10	6.62E-10	2.37E-09	3.54E-09
Non-hazardous waste disposed	[kg]	3.20E-03	6.15E-07	4.67E-06	3.21E-03
Radioactive waste disposed	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	[kg]	1.02E-05	0.00E+00	3.91E-09	1.02E-05
Materials for energy recover	[kg]	0.00E+00	0.00E+00	1.52E-07	1.52E-07
Exported energy	[MJ per energy carrier]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ZETA gypsum plaster

Environmental impacts: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO_2 eq.]	6.10E-02	2.07E-02	1.32E-02	9.49E-02
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	6.63E-09	0.00E+00	0.00E+00	6.63E-09
Acidification potential of soil and water	[kg SO_2 eq.]	1.87E-04	1.51E-04	0.00E+00	3.38E-04
Formation potential of tropospheric ozone	[kg Ethene eq.]	2.12E-05	2.67E-05	0.00E+00	4.79E-05
Eutrophication potential	[kg $(PO_4)^{3-}$ eq.]	1.04E-05	1.10E-05	0.00E+00	2.14E-05
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	2.98E-04	0.00E+00	4.88E-08	2.98E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	5.23E-01	0.00E+00	1.36E-01	6.59E-01

Environmental aspects on resource use: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
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]	8.15E-01	2.98E-05	9.95E-03	8.25E-01
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]	5.14E-01	0.00E+00	1.42E-01	6.56E-01
Use of secondary material	[kg]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Use of renewable secondary fuels	[MJ]	3.00E-03	0.00E+00	0.00E+00	3.00E-03
Use of non-renewable secondary fuels	[MJ]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Net use of fresh water	[m^3]	INA	INA	INA	INA

Other environmental information describing waste categories: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	4.58E-10	1.09E-06	2.37E-09	1.10E-06
Non-hazardous waste disposed	[kg]	2.90E-03	1.01E-03	4.67E-06	3.92E-03
Radioactive waste disposed	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Materials for recycling	[kg]	9.22E-06	0.00E+00	3.91E-09	9.22E-06
Materials for energy recover	[kg]	0.00E+00	0.00E+00	1.52E-07	1.52E-07
Exported energy	[MJ per energy carrier]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ZETA HYDRO gypsum plaster

Environmental impacts: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO_2 eq.]	6.08E-02	2.08E-02	1.32E-02	9.48E-02
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	6.63E-09	0.00E+00	0.00E+00	6.63E-09
Acidification potential of soil and water	[kg SO_2 eq.]	1.89E-04	1.52E-04	0.00E+00	3.41E-04
Formation potential of tropospheric ozone	[kg Ethene eq.]	2.13E-05	2.66E-05	0.00E+00	4.79E-05
Eutrophication potential	[kg $(PO_4)^{3-}$ eq.]	1.07E-05	1.11E-05	0.00E+00	2.18E-05
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	2.97E-04	0.00E+00	4.88E-08	2.97E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	5.23E-01	0.00E+00	1.36E-01	6.59E-01

Environmental aspects on resource use: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
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]	8.15E-01	2.98E-05	9.95E-03	8.25E-01
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]	5.14E-01	0.00E+00	1.42E-01	6.56E-01
Use of secondary material	[kg]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Use of renewable secondary fuels	[MJ]	3.00E-03	0.00E+00	0.00E+00	3.00E-03
Use of non-renewable secondary fuels	[MJ]	2.00E-03	0.00E+00	0.00E+00	2.00E-03
Net use of fresh water	[m^3]	INA	INA	INA	INA

Other environmental information describing waste categories: (FU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	4.58E-10	1.09E-06	2.37E-09	1.10E-06
Non-hazardous waste disposed	[kg]	2.90E-03	1.01E-03	4.67E-06	3.92E-03
Radioactive waste disposed	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Components for re-use	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	[kg]	9.22E-06	0.00E+00	3.91E-09	9.22E-06
Materials for energy recover	[kg]	0.00E+00	0.00E+00	1.52E-07	1.52E-07

Exported energy	[MJ per energy carrier]	0.00E+00	0.00E+00	0.00E+00	0.00E+00

VERIFICATION

The process of verification of this EPD is in accordance with 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.

NORMATIVE REFERENCES

- ISO 14025:2006: Environmental labels and declarations – Type III environmental declarations – Principles and procedure.
- 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 in construction works – Environmental product declarations – Core rules for the product category of construction products.
- PN-EN 15942:2012: Sustainability of construction works – Environmental product declarations – Communication format business-to-business.
- KOBiZE Wskaźniki emisyjności CO_2. SO_2. NO_x. CO i pyłu całkowitego dla energii elektrycznej, 2024.
- PN-EN 13279-1:2009: Spoiwa gipsowe i tynki gipsowe - Część 1: Definicje i wymagania.