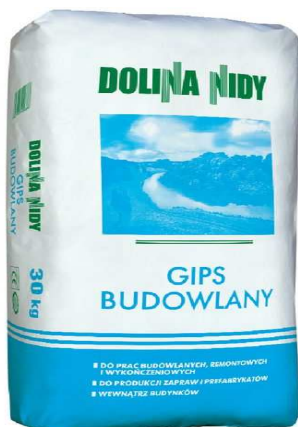


Environmental Product Declaration No 18/2014



Natural and syntenic gypsum (FGD) and anhydrite binders gypsum (dry powder products)



Issuance date: 01.03.2014

Validity date: 01.03.2019

EPD program operator:

Building Research Institute (ITB), 00-611 Warsaw, Filtrowa 1

www.itb.pl; www.zb.itb.pl/epd



ITB is the member of

The European Platform for EPD program operators.

Manufacturer

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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. It contains information about the impact of declared construction materials on environment and their aspects verified by the independent Advisory Board 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 norm).

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

The year of preparing the characteristic: 2014

Issuance date: 10.03.2014

Validation date: 01.03.2014

Validity date: 10.03.2019

Declared durability: Under normal conditions, gypsum binders have an expected service life well in excess of 50 years.

Declared unit : 1 kg

PCR: ITB PCR A General v1.4

Manufacturer and Product Information

Dolina Nidy is a manufacturer of gypsum and anhydrite binders for further processing (dry powder products). These binders are based on two types of raw materials: natural, exploit from gypsum quarry, and FGD gypsum. FGD gypsum is a unique synthetic product derived from flue gas desulfurization systems at electric power plants. Both natural and FGD gypsum are inert, non-toxic materials, harmless to human life in their natural state. They have Radiation Hygiene Certificate and in 2010 have been registered in accordance with REACH Regulation (EC) No 1907/2006 (registration number 01-2119444918-26-0138) Based on these two type of raw materials, as the only in Poland, Dolina Nidy offers gypsum binders, projection or manual gypsum plasters, different type of finishing coat, adhesives to plasterboard and gypsum used in mining. These products based on gypsum are healthy, ecological and human friendly. They create comfortable living environment by humidity regulation and enhance thermal insulation properties.

Dolina Nidy is the oldest producer of gypsum products on Polish market and manufactured gips budowlany since 1959. Gips budowlany syntetyczny has been manufactured since 2009. Anhydryt has been manufactured since 2003. It is no commercial product. It is only used as a semi-product for gypsum plasters.

Dolina Nidy has implemented an Integrated Management System consisting of three complementary subsystems:

- the quality management ISO 9001:2008 (since 2002); (see Appendix no. 10-11)
- environmental management ISO 14001:2004 +Cor 1:2009 (since 2004);
- the management of occupational health and safety PN-N 18001:2004 (since 2008). (see Appendix no. 12)

The Integrated Management System Policy defines the principal directions of DOLINA NIDY activities with a view to offering products that are safe and environmentally friendly. This is achieved by professional product development, state-of-the-art production process and meticulous quality control. The System is based on the process approach, this means that all the processes that have an impact on quality have been identified and described and members of the staff have been appointed and authorised to manage these processes. The continuous improvement in the quality of products as well as processes is aimed at winning long-term trust of our Customers and consolidating the positive image of our firm. The assumptions of the Integrated Management System Policy have been communicated to all members of the staff and published in widely available places.

Dolina Nidy has implemented and maintains a Quality and Environmental Management Systems fulfils 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 – PCA accreditation number - AC 087, Deutsche Akkreditierungsstelle D-ZM16074-01-00

Since 2007, Dolina Nidy has implemented the European Eco-Management and Audit Scheme (EMAS) which sets additional requirements connected with active involvement of employees, adaptation 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.

Product type

According to EN 13279-1:2008 standard:

Standard designation	Type of application	Commercial name
Gypsum binder	for further processing, e.g. dry powder products, gypsum block and elements	Gips budowlany Dolina Nidy
Gypsum binder	for further processing, e.g. dry powder products, gypsum block and elements	Gips budowlany syntetyczny Dolina Nidy

Anhydrite binder has no reference documents. There is a kind of high burn gypsum used as a semi-product for gypsum plasters

Application for which the product is to be used.

Description	dry powder
Destination	Gips budowlany, gips budowlany syntetyczny - for direct use or further processing e.g. dry powder products, gypsum blocks, gypsum plasterboards etc. Anhydrite – semi-product for gypsum plasters.
Colour	Gyps budowlany syntetyczny - yellow Gips budowlany, Anhydryt –grey

Technical parameters

Trade name	Gips budowlany
Description	Gypsum binder - natural
Standard designation	A1 – EN 13279-1:2008
Bulk density	850 kg/m ³
Dry density	1250 kg/m ³
Reaction to fire	A1
Product literature	Declaration of conformity no EC 01/CPR, Radiation Hygiene Certificate no HR/B/69/2009 Material Safety Data Sheet
Manufacturing site	Leszcze 15, Pińczów

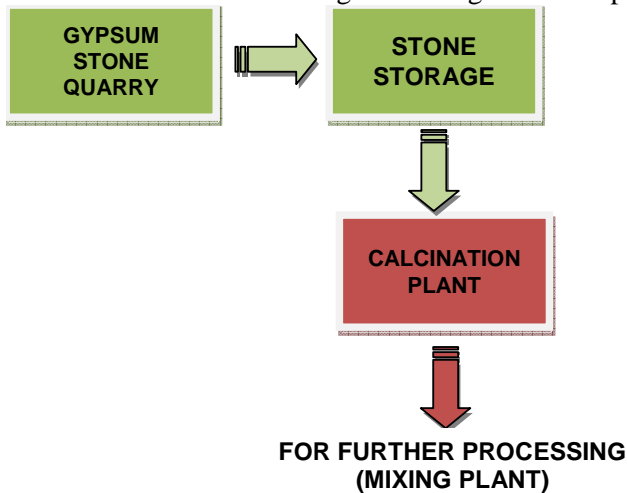
Trade name	Gips budowlany syntetyczny
Description	(FGD gypsum binder -synthetic)
Standard designation	A1 – EN 13279-1:2008
Bulk density	850 kg/m ³
Dry density	1250 kg/m ³
Reaction to fire	A1
Product literature (see Appendix no. 15)	Declaration of conformity no EC 16/CPR, Radiation Hygiene Certificate no HR/B/70/2009 Material Safety Data Sheet
Manufacturing site	Ul. Kazimierska 45, Konin

Product name	Anhydryt
Description	Anhydrite binder
Standard designation	No standard reference. It is semi-product for gypsum plasters production
Bulk density	850 kg/m ³
Dry density	-
Reaction to fire	A1
Product literature	Material Safety Data Sheet
Manufacturing site	Leszcze 15, Pińczów

Allocation

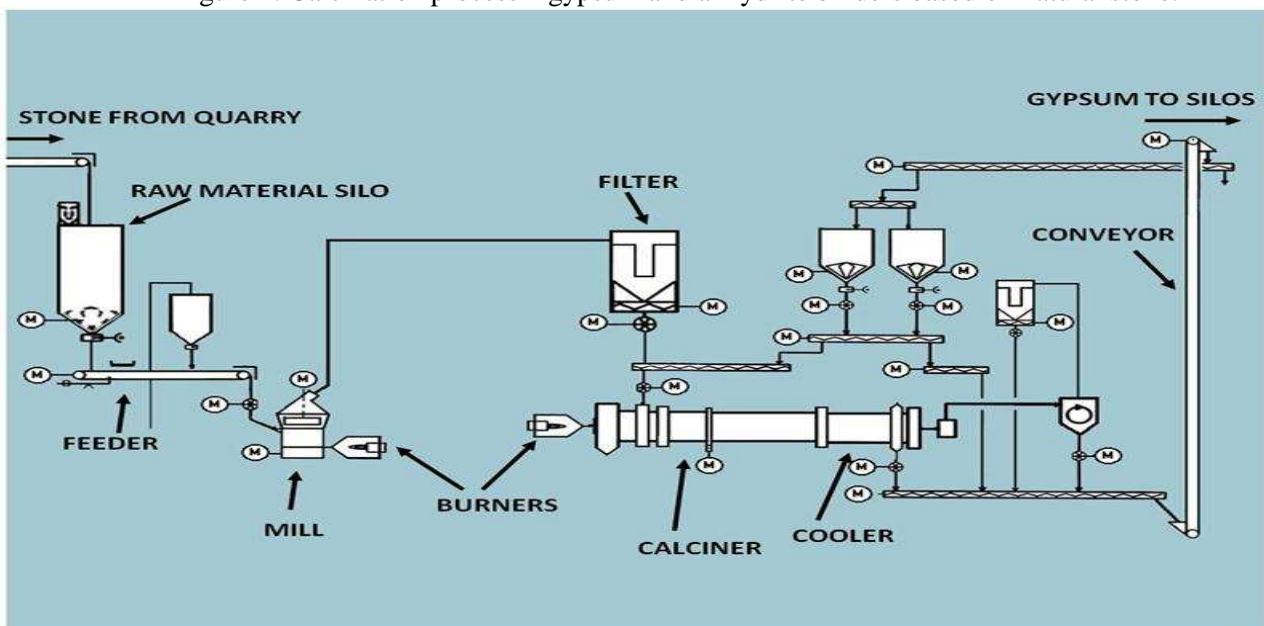
Since 2000 Dolina Nidy sp. z o. o. belongs to Atlas Group, the largest manufacturer of construction chemicals in Poland. The company offers gypsum binders, projection or manual gypsum plasters, different type finishing coat, adhesives to plasterboard, and gypsum used in mining. The production plant in Leszcze, built in 2003-2007 is a modern full automation complex, consisting of a gypsum stone quarry, a stone storage, a calcination plant, a gypsum binder mixing plant and a storage hall.

Figure 1. Diagram of the production process



Gypsum stone after excavation in the quarry is held in the store from where it goes to further processing. The calcination plant provides mechanical processing and heat treatment of stone. The first stage of the gypsum stones treating is a mechanical process which consists in stones breaking, grinding and drying in a bowl-roll mill. Depending on mill separator speed, different graining rock is obtained, that determines its further use. Then the milled and dried gypsum stone is dispensed to calcinators, where it is heat treated. For various types of binders, some or all crystallization water is removed. In this way, gypsum hemihydrate ($\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$) or anhydrite binder (CaSO_4 - high-burn gypsum) are obtained. Afterwards gypsum is transported from calcinators to silos, and pneumatically transported to the mixing plant subsequently. In the mixing plant - depending on binder type - gypsum and anhydrite are blended in the mixer with different additives.

Figure 2. Calcination process – gypsum and anhydrite binders based on natural stone.



List all different products manufactured at Leszcze calcination plant, including quantities and values. Data is required for 100% of the products manufactured at this site.

FGD gypsum is produced in SO₂ reduction process in Konin Electricity Plant (EC Konin). CO₂ from process was allocated to electricity production as well the impact from steam used in gypsum binder production is allocated in the electricity. For the FGD production was allocated water and CaCO₃ impact and energy for product transportation inside factory.

Products	Description/product name	Approximated volume (%)
1	Gips budowlany	27,8
2	Gips modelowy	19,4
3	Anhydryt	8,8
4	Mączka gipsowa	43,9
	Total	100,000

System limits

The life cycle analysis of the examined products covers A1-A3 modules (Cradle to Gate) in accordance with EN 15804:2012. Its include production, including raw materials extraction and energy provision up to the finished, packed product at the factory gate. Processes whose total contribution to the final result, according to mass looked at, is less than 0.5 % was ignored. All inventory processes for gypsum stone mining as explosive substances and gas emissions in explosion were included. For gypsum all processes as: crushing, milling, drying, calcination, transport, and storage processes were included. Office impacts were also taken to consideration.

Data collection period

The data for manufacture of the examined products refer to the year 2012. The life cycle assessments were prepared for Poland as reference area (national electricity mix for 2012).

Data quality

The values determined to calculate the LCA originate from verified LCI Dolina Nidy inventory data.

Assumptions and estimates

Impacts for each product stage and factory process were inventoried and calculated separately. All emission inventory used was specific.

Databases

The data for the processes come from the following databases: LCI questionnaire, Ecoinvent, Ullmann's, ITB-Data, WAT, Tauron and impacted scientific literature sources.

Note

Specific information on application and other actions with these products are described in detail in the technical data sheet available on the producers website.

Raw materials and energy

Table 1. Raw materials

No	Name of raw material	total used in production [kg]	used on product [kg/kg]
Leszcze (Gips budowlany)			
1	Gypsum stone	26 581 880,0	0,52
2	FGD Synthetic gypsum	24 475 690,0	0,48
Leszcze (anhydryt)			
1	Gypsum stone	8 671 300,0	0,51
2	FGD Synthetic gypsum	8 318 450,0	0,49
Konin (Gips budowlany)			
1	FGD Synthetic gypsum	141835653,8	100%

Table 2. Primary energy consumption for A3 module

Energy resource	Unit	total in production	used on product [unit/Mg]
Leszcze			
electricity	kWh	4714857	31,6
natural gas	m ³	3151817,9	21,1
Konin			
electricity	kWh	3349914	30,93
water steam from EC	GJ	152610	1,41

Emissions (LCI) and their impact on the environment

Table 3. Emissions into air generated during production stage A3

Air emission	Unit	total in production [Mg]	used on product [kg/Mg]
Leszcze			
Dust	kg	4320,33	0,02899
CO	kg	3569,99	0,0240
CO ₂	kg	6049710	40,5922
NO ₂	kg	11145,74	0,0748
Konin			
Dust	kg	693,41	0,00640

Table 4. Emissions into water generated during production stage A3

Leszcze		
Water	m ³	2103
BOD	mg/l	8,1
COD	mg/l	24
Suspended matter	mg/l	38

Konin		
Water	m ³	852
BOD	mg/l	8,1
COD	mg/l	24

Table 5. Waste generated in the phase of product manufacturing A3

Waste code	Unit	total in production [Mg]	used on product [kg/Mg]
Leszcze			
Municipal wastes:	8,21	5,5E-05	Landfil/recycling
Other watses:			
70208	0,0927	6,2E-07	re-using
80313	0,0036	2,4E-08	recycling
080317	0,0072	4,8E-08	dengerous wastes
101382	448,05	0,003	re-using
130208	0,725	4,9E-06	dengerous wastes
130899	0,291	1,95E-06	dengerous wastes
150101	0,2884	1,94E-06	recycling
150102	0,10	7,08E-07	recycling
150202	0,18	1,2E-06	dengerous wastes
150203	0,25	1,68E-06	recycling
160103	0,13	9,33E-07	Recycling
160119	0,0824	5,53E-07	Recycling
160199	0,128	8,63E-07	Recycling
160601	0,028	1,9E-07	dengerous wastes
161106	1,2	8,0E-06	reycling
168001	0,011	7,9E-08	recycling
170405	6,9	4,63E-05	recycling
Konin			
Municipal wastes:	20,4	2,14044E-05	Landfil/recycling
Other watses:			
101382	110,2	0,000115626	reycling
150101	6,21	6,51576E-06	Recycling
150102	2,34	2,45521E-06	Recycling
150202	0,61	6,40034E-07	dengerous wastes
160103	0,2	2,09847E-07	reycling
160601	0,15	1,57385E-07	dengerous wastes

Environmental characteristics (LCA)

Table 6. Environmental characteristic for milled gypsum stone- "Leszcze mine" (1kg)

Environmental assessment information (MND – Module not declared, 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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 kg					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	0,005	3,00E-05	0,007	0,011
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	2,28E-10	3,42E-11	3,17E-09	3,43E-09
Acidification potential of soil and water	[kg SO ₂ eq.]	1,20E-05	2,87E-07	8,95E-05	1,02E-04
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	2,73E-06	3,26E-08	2,60E-05	2,87E-05
Formation potential of tropospheric ozone	[kg Ethene eq.]	1,02E-06	1,21E-08	4,01E-07	1,43E-06
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	1,20E-05	1,45E-06	1,46E-05	2,81E-05
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	0,01	3,96E-04	0,078	0,084
Environmental aspects on resource use: 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]	0,00	0,00	0,007	0,008
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]	0,01	4,00E-04	0,09	0,09
Use of secondary material	[kg]	0,00	0,00	0,00	0,00
Use of renewable secondary fuels	[MJ]	0,00	0,00	0,00	0,00
Use of non-renewable secondary fuels	[MJ]	0,00	0,00	0,00	0,00
Net use of fresh water	[dm ³]	0,0001	0,00	0,0004	0,0005
Other environmental information describing waste categories: 1 kg					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	5,00E-07	0,00	0	5,00E-07
Non-hazardous waste disposed	[kg]	6,00E-06	1,20E-07	1,94E-04	2,00E-04
Radioactive waste disposed	[kg]	0	0,00	0	0
Components for re-use	[kg]	0	0,00	0	0
Materials for recycling	[kg]	0	5,02E-08	0	5,02E-08
Materials for energy recovery	[kg]	0	0,00	0	0
Exported energy	[MJ]	0	0,00	0	0

Table 7. Environmental characteristic for gypsum (dry powder) Leszcze (1kg)

Environmental assessment information (MND – Module not declared, 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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 kg					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	0,006	2,29E-04	1,08E-01	0,115
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	1,88E-09	6,50E-10	9,40E-10	3,47E-09
Acidification potential of soil and water	[kg SO ₂ eq.]	6,08E-05	1,67E-06	6,34E-05	1,26E-04
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	1,67E-05	2,95E-07	1,24E-05	2,93E-05
Formation potential of tropospheric ozone	[kg Ethene eq.]	9,00E-07	1,22E-07	5,90E-07	1,61E-06
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	1,96E-05	1,10E-05	7,06E-05	1,01E-04
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	0,063	3,02E-03	9,68E-01	1,035
Environmental aspects on resource use: 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]	0,006	0,00	2,45E-02	0,030
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]	0,070	0,00	9,95E-01	1,07
Use of secondary material	[kg]	0,000	0,00	0,00	0,00
Use of renewable secondary fuels	[MJ]	0,000	0,00	0,00	0,00
Use of non-renewable secondary fuels	[MJ]	0,000	0,00	0,00	0,00
Net use of fresh water	[dm ³]	0,096	0,00	0,0137	0,11
Other environmental information describing waste categories: 1 kg					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	2,60E-07	0,00	2,50E-06	2,76E-06
Non-hazardous waste disposed	[kg]	1,88E-03	9,12E-07	8,82E-06	1,88E-03
Radioactive waste disposed	[kg]	0	0,00	0	0
Components for re-use	[kg]	0	0,00	0	0
Materials for recycling	[kg]	2,61E-08	3,82E-07	4,00E-06	4,40E-06
Materials for energy recovery	[kg]	0	0,00	0	0
Exported energy	[MJ]	0	0,00	0	0

Table 8. Environmental characteristic for anhydrite (dry powder) Leszcze (1kg)

Environmental assessment information (MND – Module not declared, 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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 kg					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	0,006	2,29E-04	1,12E-01	0,119
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	1,85E-09	6,50E-10	9,11E-10	3,41E-09
Acidification potential of soil and water	[kg SO ₂ eq.]	5,99E-05	1,67E-06	8,43E-05	1,46E-04
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	1,64E-05	2,95E-07	1,75E-05	3,43E-05
Formation potential of tropospheric ozone	[kg Ethene eq.]	8,89E-07	1,22E-07	1,80E-06	2,81E-06
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	1,94E-05	1,10E-05	6,78E-05	9,82E-05
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	0,06	3,02E-03	9,37E-01	1,003
Environmental aspects on resource use: 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]	0,01	0,00	2,42E-02	0,030
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]	0,07	0,00	9,61E-01	1,03
Use of secondary material	[kg]	0,00	0,00	0,00	0,00
Use of renewable secondary fuels	[MJ]	0,00	0,00	0,00	0,00
Use of non-renewable secondary fuels	[MJ]	0,00	0,00	0,00	0,00
Net use of fresh water	[dm ³]	0,10	0,00	0,0132	0,11
Other environmental information describing waste categories: 1 kg					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	2,55E-07	0,00	2,50E-06	2,76E-06
Non-hazardous waste disposed	[kg]	1,92E-03	9,12E-07	6,00E-06	1,92E-03
Radioactive waste disposed	[kg]	0	0,00	0	0
Components for re-use	[kg]	0	0,00	0	0
Materials for recycling	[kg]	2,56E-08	3,82E-07	4,00E-06	4,40E-06
Materials for energy recovery	[kg]	0	0,00	0	0
Exported energy	[MJ]	0	0,00	0	0

Table 8. Environmental characteristic for FGD gypsum (wet, from EC SO₂ reduction), Konin 1kg

Environmental assessment information (MND – Module not declared, 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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
Environmental impacts: 1 kg																
Indicator		Unit		A1	A2	A3	A1-A3									
Global warming potential		[kg CO ₂ eq.]		0,001	1,50E-05	3,79E-05	0,001									
Depletion potential of the stratospheric ozone layer		[kg CFC 11 eq.]		1,43E-10	1,71E-11	4,32E-11	2,03E-10									
Acidification potential of soil and water		[kg SO ₂ eq.]		1,58E-05	1,43E-07	3,62E-07	1,63E-05									
Eutrophication potential		[kg (PO ₄) ³⁻ eq.]		3,56E-06	1,63E-08	4,12E-08	3,62E-06									
Formation potential of tropospheric ozone		[kg Ethene eq.]		3,05E-07	6,07E-09	1,53E-08	3,26E-07									
Abiotic depletion potential (ADP-elements) for non-fossil resources		[kg Sb eq.]		7,89E-06	7,23E-07	1,83E-06	1,04E-05									
Abiotic depletion potential (ADP-fossil fuels) for fossil resources		[MJ]		0,04	1,98E-04	5,00E-04	0,041									
Environmental aspects on resource use: 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]		0,00	0,00	5,00E-05	0,004									
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]		0,042	0,00	6,00E-04	0,045									
Use of secondary material		[kg]		0,00	0,00	0,00	0,00									
Use of renewable secondary fuels		[MJ]		0,00	0,00	0,00	0,00									
Use of non-renewable secondary fuels		[MJ]		0,00	0,00	0,00	0,00									
Net use of fresh water		[dm ³]		0,20	0,00	0,0003	0,20									
Other environmental information describing waste categories: 1 kg																
Indicator		Unit		A1	A2	A3	A1-A3									
Hazardous waste disposed		[kg]		0,00E+00	0,00	0	0,00E+00									
Non-hazardous waste disposed		[kg]		0,0037	5,40E-06	1,00E-04	3,71E-03									
Radioactive waste disposed		[kg]		0,00	0,00	0,00	0,00									
Components for re-use		[kg]		0,00	0,00	0,00	0,00									
Materials for recycling		[kg]		0,00	0,00	0,00	0,00									
Materials for energy recovery		[kg]		0,00	0,00	0,00	0,00									
Exported energy		[MJ]		0,00	0,00	0,00	0,00									

Table 8. Environmental characteristic for FGD gypsum (dry), Konin 1kg

Environmental assessment information (MND – Module not declared, 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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Environmental impacts: 1 kg					
Indicator	Unit	A1	A2	A3	A1-A3
Global warming potential	[kg CO ₂ eq.]	0,002	7,50E-06	0,003	0,004
Depletion potential of the stratospheric ozone layer	[kg CFC 11 eq.]	2,64E-10	8,55E-12	3,75E-11	3,10E-10
Acidification potential of soil and water	[kg SO ₂ eq.]	2,12E-05	7,17E-08	4,35E-06	2,57E-05
Eutrophication potential	[kg (PO ₄) ³⁻ eq.]	4,70E-06	8,16E-09	1,05E-06	5,76E-06
Formation potential of tropospheric ozone	[kg Ethene eq.]	4,24E-07	3,04E-09	2,34E-07	6,61E-07
Abiotic depletion potential (ADP-elements) for non-fossil resources	[kg Sb eq.]	1,36E-05	3,62E-07	2,00E-05	3,39E-05
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	[MJ]	0,053	9,90E-05	0,023	0,076
Environmental aspects on resource use: 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]	0,005	0,00E+00	1,400 ¹	1,405
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]	0,063	1,09E-04	0,03	0,09
Use of secondary material	[kg]	0,000	0,00E+00	0,00	0,00
Use of renewable secondary fuels	[MJ]	0,000	0,00E+00	0,00	0,00
Use of non-renewable secondary fuels	[MJ]	0,000	0,00E+00	0,00	0,00
Net use of fresh water	[dm ³]	0,261	9,90E-06	0,0078	0,2684
Other environmental information describing waste categories: 1 kg					
Indicator	Unit	A1	A2	A3	A1-A3
Hazardous waste disposed	[kg]	0,000	0,00E+00	7,90E-10	7,90E-10
Non-hazardous waste disposed	[kg]	0,005	2,70E-06	7,95E-05	4,90E-03
Radioactive waste disposed	[kg]	0,000	0,00E+00	0	0
Components for re-use	[kg]	0,000	0,00E+00	0	0
Materials for recycling	[kg]	0,000	0,00E+00	1,59E-05	1,59E-05
Materials for energy recovery	[kg]	0,000	0,00E+00	0	0
Exported energy	[MJ]	0,000	0,00E+00	0	0

¹steam as a heat waste form electricity production, used as the heat pump process is specifically considered as a renewable resource in the gypsum production

Verification

The process of verification of an EPD is in accordance with EN ISO 14025, clause 8 and ISO 21930, clause 9. 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
Independent verification corresponding to ISO 14025 & 8.3.1. <input checked="" type="checkbox"/> external <input type="checkbox"/> internal
Verification of EPD: dr eng. Aleksander Panek LCI audit and input data verification: msc eng. Dominik Bekierski LCA: dr eng. Michał Piasecki Verification of procedures and declaration: dr eng. Halina Prejzner

Normative references

- ISO 14025:2006, Environmental management – Type III environmental declarations – Principles and procedure.
- ISO 21930:2007, Sustainability in building and construction – Environmental declaration of building products.
- ISO 14044:2006, Environmental management – Life cycle assessment – Requirements and guidelines.
- ISO 15686-1:2000, Buildings and constructed assets — Service life planning — Part 1: General principles
- ISO 15686-8:2008, Buildings and constructed assets – Service life planning – Part 8: Reference service life
- EN 15804:2012, Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.



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ŚWIADECTWO nr 018/2014 DEKLARACJI ŚRODOWISKOWEJ III TYPU

Wyroby:

Gips budowlany, Gips budowlany syntetyczny i Anhydryt

Wnioskodawca:

DOLINA NIDY Sp. z o.o.

28-400 Pińczów, Leszcze 15

potwierdza się poprawność ustalenia danych uwzględnionych przy opracowaniu
Deklaracji Środowiskowej III typu oraz zgodność z wymaganiami normy

EN 15804:2012

Zrównoważoność obiektów budowlanych.

Deklaracje środowiskowe wyrobów.

Podstawowe zasady kategoryzacji wyrobów budowlanych.

Niniejsze świadectwo, wydane po raz pierwszy 10 marca 2014 r. jest ważne 5 lat,
lub do czasu zmiany wymienionej Deklaracji Środowiskowej

Kierownik
Zakładu Fizyki Ciepłej,
Instalacji Sanitarnych i Środowiska


Robert Geryło



Dyrektor
Instytutu Techniki Budowlanej


Jan Bobrowicz

Warszawa, marzec 2014 r.