

# Environmental Product Declaration



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

## Panel Standard

*Noise barriers*

**Noise srl**

**noise**  
LE DIFESE

Programme:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
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*An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [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
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<b>Accountabilities for PCR, LCA and independent, third-party verification</b>
<b>Product Category Rules (PCR)</b>
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): Construction Products 2019:14 version 1.2.5
PCR review was conducted by: <i>The Technical Committee of the International EPD® System. Chair of the PCR review is Claudia A. Peña. The review panel may be contacted via <a href="mailto:info@environdec.com">info@environdec.com</a></i>
<b>Life Cycle Assessment (LCA)</b>
LCA accountability: <i>Noise srl</i>
<b>Third-party verification</b>
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:  <input checked="" type="checkbox"/> EPD verification by individual verifier  Third-party verifier: Guido Croce  Approved by: The 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 registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

EPD OWNER	<p>NOISE s.r.l          Via Donizzetti 27          30120 Oderzo (TV)          Tel.+39 0438 1671515  <u>Representative: Adriano Sartor</u>  <a href="https://www.noisesrl.it/home.php">https://www.noisesrl.it/home.php</a>  <u>Production site:</u>          Via Padania 21/23          31020 San Vendemmiano (TV)</p>
Technical support	<p>Studio Fieschi &amp; soci Srl          C.so Vittorio Emanuele II, 18          10123 Torino (TO) – Italia          Tel.: +39 011 6599677  <a href="http://www.studiofieschi.it">www.studiofieschi.it</a></p>

### Description of the organisation: NOISE s.r.l

Noise is a company based in San Vendemiano (TV) that specializes in the design, manufacture of soundproofing barriers. Through Noise's continuous research and development over the years, the group has succeeded in creating innovative barriers made of recycled plastics.

## Product information – Noise Panel Standard

Product identification: Sound absorption barriers

The product under study aims to absorb noise in the scenarios in which it is installed. The scenarios where it is most frequently installed are roads, highways, and railway stations.

*Table 1 Technical characteristics*

Certification test	Panel polyester fibres 50 kg/m <sup>3</sup>	Reference standard
Sound absorption	A5 (DL $\alpha$ 16 dB)	UNI EN 1793-1:2013
Sound insulation	B3 (DLR 28 dB)	UNI EN 1793-2:2018 UNI EN 1793-3:1999
Sound reflection index Airborne sound insulation	DLRI 8 dB (8,3 dB) DLSI,G 30 dB	UNI EN 1793-5:2016 UNI EN 1793-6:2012
Wind load	1,6 kN/m <sup>2</sup>	UNI EN 1794-1:2018 Appendice A
Snow clearing load	15,0 kN (2mx2m)	UNI EN 1794-1:2018
Dry weight	36,4 Kg 64,0 Kg	UNI EN 1794-1:2011 Appendice B
Vertical load	1,5 kN/m	UNI EN 1794-1:2011 Appendice B

<b>Resistance to falling fragments</b>	C2 Class	UNI EN 1794-2:2011 Appendice B
<b>light reflection</b>	Rif. Bianco RAL: 9016 Fronte 5,5 – 26,6 – 53,6 Classe 2 Retro 8,1 – 40,0 – 83,2 Classe 1	UNI EN 1794-2:2011 Appendice E
<b>Stone impact</b>	Meets requirements	UNI EN 1794-1:2011 Paragrafo C.2

The product is made of materials designed for high performance and durability, specifically the body of the panel is made of PVC, with a combination of recycled and virgin plastic material and a UV-resistant virgin PVC outer film. All components of the panel, including the outer caps and inner sound-absorbing mats, are made from 100% recyclable plastic materials.

Product components	Weight kg		Recycled material weight		Biogenic C content, weight	
Panel body - PVC	17,16	75%	13,59	79%	0	0%
Panel padding - Polyester fibres	4,76	21%	3,094	65%	0	0%
Panel caps - PP and gaskets	0,87	4%	0	0%	0	0%
<b>TOTAL</b>	<b>22,79</b>	<b>100%</b>	<b>16,68</b>	<b>73%</b>	<b>0</b>	<b>0%</b>
Packaging materials	Weight, kg		Weight-% (versus the product)		Weight biogenic carbon (kg C/kg)	
Sheet – LDPE	0,1	13%	0,42%		0	
Trestles - Legno	0,65	87%	2,76%		0,33	
<b>TOTAL</b>	<b>0,75</b>	<b>100 %</b>	<b>3%</b>		<b>0,33</b>	

**Environmental/hazardous properties:** No substance listed in the Candidate List of Substances of Very High Concern for Authorisation under the REACH Regulations is present in this product, either above the limits for registration with the European Chemicals Agency or in excess of 0,1 weight-% of the product.

UN CPC code: 53290 Other civil engineering works

Geographical scope: the geographical scope of application related to product analysis is Italian for modules A1 to A3 and European for modules of A4 to C4

## LCA information

Declared unit	1 mq di Panel standard
Time representativeness	2021
Database used	Ecoinvent v3.8
Software used	Simapro 9.5
System boundaries	Cradle to gate with options: modules A1-A3 plus additional modules A4, A5, C1-C4 and D
Geographical scope	The geographical scope of application related to product analysis is Italian for modules A1 to A3 and European for modules of A4 to C4

### LIFE CYCLE ANALYSIS METHODOLOGY

Life Cycle Assessment methodology is a method of assessing the environmental impacts generated by all stages of a product's life cycle, from raw material extraction, production, use, to the disposal of the product.

The environmental impact of products was elaborated according to the general EPD Program rules as well as on specific international reference standards on Environmental Management - life cycle assessment (UNI EN ISO 14040 - UNI EN ISO 14044), environmental labels and declarations (UNI EN ISO 14025), construction sustainability - environmental product declaration (UNI EN 15804).

The PCR Construction Products 2019:14 version 1.2.5 for construction products developed by the International EPD® System was applied.

### DECLARED UNIT

The declared unit is 1 square meter of Panel standard.

### TIME REPRESENTATIVENESS

The data considered refer to the Panel standard installed by Noise during the 2021, amount to 10.624 square meters.

### SYSTEM BOUNDARIES

The LCA analysis was conducted from cradle to gate with options, modules C1-C4, module D and with optional modules A4-A5 ('from cradle to gate with options, modules C1-C4, module D and with optional modules A4-A5'). Environmental performance in terms of potential environmental impacts, resource use, and waste generation is presented in the three phases Upstream, Core, and Downstream.

Modules B1-B7, related to the use phase, were excluded from the LCA analysis because they are not representative for the product analysed.

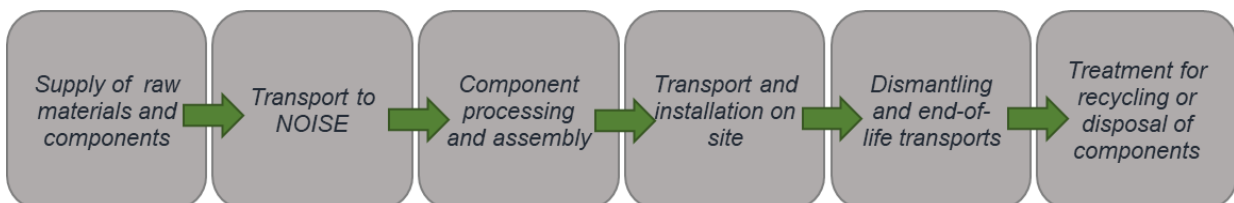


Figure 1 Description of life cycle stages included in the Environmental Product Declaration

	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	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	IT	IT	IT	RER									RER				-
Specific data used	X			X	-	-	-	-	-	-	-	-	-	-	-	-	x

Figure 2 Life cycle modules included in the Environmental Product Declaration (X = Included; ND = Not Declared)

Site-specific data: site-specific data used in modules A1-A3 are data regarding activities carried out by suppliers on raw and recycled materials, production of panel component and transports, and also energy consumed from NOISE. The contribution of site-specific data in steps A1-A3 is >90%.

### CUT-OFF CRITERIA

The cut-off rules contained in EN 15804:2012 + A2:2019 and PCR 2019:14 have been applied.

Depending on a preliminary analysis to assess the contribution in weight of each component on the finished product, it was shown that the EPDM gaskets weigh less than 1% of the weight of the finished product so it is excluded from the analysis.

Also a preliminary analysis to assess the contribution of the impact of packaging and components that constitute the finished product was conducted; it was shown that for each mandatory indicator the following items account for less than 1% of the calculated impacts for the product considered; therefore, the following data were excluded from this analysis:

- waste related to the consumption of lubricating oils (EWC code 13 02 08\*) from the supplier VBN
- Nylon waste from the company NOISE
- polyester straps used by NOISE to transport the product to the construction site (3 cm of strapping per m<sup>2</sup> of product).

### ALLOCATION PROCEDURES

Specifically, an allocation was applied to the following processes:

- Component weight and energy consumption; total annual production data (2021) were provided from suppliers, these were related to the weight of the supplier's total production (kg) and related to the m<sup>2</sup> of the NOISE product

## MORE INFORMATION ON THE PRODUCT

More information on product's characteristics can be found at [www.noisesrl.it](http://www.noisesrl.it).

### COMPONENTS PRODUCTION (A1-A3)

The constituent materials of the product under study are polyvinyl chloride (PVC), polypropylene (PP) and polyester fibres.

All materials purchased by NOISE derived from Italian suppliers.

To model the transport of the materials purchased from suppliers, primary data provided by the suppliers has been used, and any data gaps were filled using average European scenarios from literature and online tools for calculating distances.

Primary data provided by NOISE were used to model transports of semi-finished products sent to NOISE once assembled to constitute the finished product.

The recycled shares of PVC and Polyester components were provided during data collection by the respective suppliers and confirmed by NOISE, and information derived from literature was used for the model.

The electricity used by Noise for the working activities derived 100% from renewable energy (100% hydroelectric).

### TRANSPORT TO INSTALLATION SITE (A4)

All components are delivered to the installation site directly from Noise, by Euro 4 trucks.

Country	% Sales in 2021	Mode of transport	Medium distance	kgkm
Italy	6%	Truck > 32t Euro 4	216 km	313
France	1%	Truck > 32t Euro 4	1.374 km	176
England	92%	Truck > 32t Euro 4	600 km	21.573
		Train	1.000 km	21.000
Belgium	1%	Truck > 32t Euro 4	1.286 km	329

Figure 3 Transports information

### PRODUCT INSTALLATION (A5)

As a precautionary scenario, it was considered that all the panels are moved and lifted using an electric crane. Packaging from the panels are sent to recycling or disposal due to the specific countries waste statistics.



Resource consumption	Machinery	Value
Electricity	Electric crane	0,0016 kWh
<b>Waste</b>		
LDPE	-	0,10 kg
Wood trestles	-	0,65 kg

Figure 4 Product installation

### PRODUCT DISMANTLING AND DISPOSAL (C1-C4)

All the panels are removed using an electric crane, and each component are manually separated. The end-of-life scenario includes all operations required to treat the single components in order to reach the end-of-waste status.

The most recent Eurostat end-of-life waste statistics specific for the interested countries were considered for modeling the end-of-life of plastics.

Country	Landfill	Incineration	Energy recovery	Recycling
Italy	4,75%	0,03%	6,44%	88,78%
France	1,10%	0,01%	80,81%	18,08%
England	11%	1%	0%	88%
Belgium	4%	0%	1%	92%

Figure 5 End of life scenarios

Within module C3 (treatment for reuse, recovery or recycling) included polymers sent to treatment for material recycling.

Module C4 (final disposal) includes materials sent for disposal to landfill or incineration.



## Results of the environmental performance indicators

### Mandatory impact category indicators according to EN 15804

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	1,6E+01	1,6E+00	2,31E-02	5,12E-04	1,62E-01	2,5E+00	1,0E+00	-4,28E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	6,18E-02	1,60E-03	-9,9E-01	3,13E-07	1,10E-05	1,10E-03	4,66E-05	-1,18E-02
GWP-luluc	kg CO <sub>2</sub> eq.	2,41E-03	5,65E-04	6,84E-06	2,82E-08	1,30E-06	1,09E-04	1,32E-05	-7,64E-03
GWP-total	kg CO <sub>2</sub> eq.	1,6E+01	1,6E+00	-9,7E-01	5,13E-04	1,62E-01	2,5E+00	1,0E+00	-4,30E+00
ODP	kg CFC 11 eq.	3,15E-06	3,25E-07	2,48E-09	4,32E-11	3,82E-08	1,59E-07	7,04E-09	-1,83E-05
AP	mol H <sup>+</sup> eq.	3,79E-02	1,03E-02	1,52E-04	1,07E-06	7,30E-04	4,72E-03	2,92E-04	-2,38E-02
EP-freshwater	kg P eq.	2,32E-04	2,62E-05	3,44E-07	1,62E-08	8,23E-08	4,78E-05	3,92E-07	-2,49E-04
EP-marine	kg N eq.	8,62E-03	3,98E-03	6,47E-05	2,64E-07	2,68E-04	1,46E-03	4,09E-04	-4,93E-03
EP-terrestrial	mol N eq.	9,33E-02	4,38E-02	7,17E-04	2,99E-06	2,95E-03	1,61E-02	1,37E-03	-4,70E-02
POCP	kg NMVOC eq.	2,38E-02	1,06E-02	1,63E-04	7,93E-07	7,15E-04	4,08E-03	3,75E-04	-1,25E-02
ADP-minerals&metals*	kg Sb eq.	9,07E-06	7,00E-08	9,85E-10	1,60E-11	6,99E-09	6,68E-08	5,55E-09	-5,27E-06
ADP-fossil*	MJ	2,7E+02	2,4E+01	2,24E-01	1,22E-02	2,3E+00	3,8E+01	2,74E-01	-1,14E+02
WDP*	m <sup>3</sup>	7,5E+00	5,12E-02	6,02E-04	2,43E-05	-3,9E-04	8,63E-02	8,11E-03	-4,15E+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								

\* Disclaimer: 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.

### Additional mandatory and voluntary impact category indicators

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D

GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	1,64E+01	1,57E+00	2,35E-02	5,13E-04	1,62E-01	2,49E+00	1,01E+00	-4,3E+00
Particulate matter emissions	Disease incidence	1,96E-07	1,32E-07	1,58E-09	8,04E-12	1,45E-08	5,54E-08	3,96E-09	-2,52E-07
Ionizing radiation, human health	kBq U235 eq.	2,42E-01	1,27E-01	1,41E-03	1,70E-04	9,91E-03	4,92E-01	1,49E-03	-1,77E-01
Eco-toxicity (freshwater)	CTUe	7,97E+01	9,57E+00	1,52E-01	3,91E-03	1,00E+00	1,60E+01	2,81E+00	-8,6E+01
Human toxicity, cancer effects	CTUh	9,76E-09	1,34E-10	9,07E-11	1,20E-12	1,40E-11	3,66E-09	1,44E-10	-9,43E-10
Human toxicity, non-cancer effects	CTUh	5,36E-08	1,58E-08	4,10E-10	1,69E-12	1,96E-09	1,38E-08	1,61E-09	-5,59E-08
Land use related impacts/Soil quality	dimensionles	1,23E+02	6,73E-01	1,44E-02	1,49E-03	6,72E-03	4,40E+00	4,32E-01	-4,6E+00

Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017

## Resource use indicators

Indicator	Unit	Results per declared unit							
		A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	3,47E+01	9,02E-01	1,20E-02	4,45E-04	3,50E-03	1,30E+00	2,95E-02	-3,9E+00
PERM	MJ	1,12E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,58E+01	9,02E-01	1,20E-02	4,45E-04	3,50E-03	1,30E+00	2,95E-02	-3,9E+00
PENRE	MJ	2,64E+02	2,38E+01	2,24E-01	1,22E-02	2,28E+00	3,77E+01	2,74E-01	-1,1E+02
PENRM	MJ	9,71E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,74E+02	2,38E+01	2,24E-01	1,22E-02	2,28E+00	3,77E+01	2,74E-01	-1,1E+02
SM	kg	1,81E+01	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
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
FW	m <sup>3</sup>	1,73E-01	4,23E-03	1,94E-04	2,00E-06	5,86E-06	7,43E-03	3,86E-04	-8,59E-02

<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.

Acronyms	<p>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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water</p>
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## Waste indicators

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,32E-01	4,69E-03	5,00E-03	3,06E-06	6,93E-05	4,27E-01	1,05E-02	-8,43E-02
Non-hazardous waste disposed	kg	8,08E-02	4,16E-03	3,36E-01	1,53E-06	5,64E-05	1,47E+00	4,87E+00	2,43E-01
Radioactive waste disposed	kg	3,26E-04	1,71E-04	1,46E-06	8,52E-08	1,63E-05	2,52E-04	1,60E-06	-1,39E-04

## Output flow indicators

Results per declared unit									
Indicator	Unit	A1-A3	A4	A5	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
Material for recycling	kg	1,79E+00	0,00E+00	4,34E-01	0,00E+00	0,00E+00	1,99E+01	0,00E+00	0,00E+00
Materials for energy recovery	kg	1,43E-03	0,00E+00	7,44E-02	0,00E+00	0,00E+00	0,00E+00	2,00E-01	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
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

## Additional environmental information

Once disassembled, all components of the product are potentially entirely recyclable.

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