

MARCOTHERM EPS

THERMAL COATING SYSTEM



Environmental Product Declaration

San Marco Group SpA



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(www.environdec.com)

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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.

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1. The company and the product

San Marco Group SpA has been working to quantify the environmental impact of some of its products in order to improve their technical and environmental performance.

The objective of San Marco Group SpA is to make the entire colour supply chain more environmentally responsible, pursuing a policy of transparency with regard to the environmental impact of its products.

In this context, San Marco Group SpA, which has already achieved the EPD process certification on June 2018, has decided to obtain the EPD certification for the coating system Marcotherm.

This EPD is in line with the international standards ISO 14040/14044, the PCR 2019:14 v1.0 “Construction products” and the standard UNI EN 15804.

1.1 San Marco Group SpA

San Marco Group, with its 8 manufacturing facilities around the world and 7 brands, has become a leader in the paint and coatings sector for professional construction in Italy.

San Marco Group has a capillary distribution network throughout Italy, leading to highly specialized retail stores in Professional Application Centres that can offer high quality products and services to colour professionals.

Outside Italy, the San Marco Group is present in more than 40 countries around the world, through specialized distributors. Thanks to a company policy that focuses on greater internationalization and continuous and significant investments in both production and Research & Development, the company’s commercial and manufacturing structure is constantly expanding.



1.2 Mission

- To become one of the top industrial companies in Italy in the paint and coatings sector for professional construction in terms of market share, product quality and territorial coverage.
- To strengthen loyalty with Italian and foreign customers by offering a range of qualified services in terms of content and reliability, in order to guarantee the support needed for the selling of its products through the best partners operating in this segment.
- To be an important reference in the market in terms of business ethics and responsibility for collaborators, customers, suppliers and potential investors.
- To promote the culture of restoration construction in Europe and the value of the “Made in Italy” and “Made in Venice” brands throughout the world.

1.3 Environmental policy

Protecting the environment and respecting the workplace for operators are important aspects of San Marco Group's company policy. This is why San Marco Group is continuously trying to improve the quality of its products and its production cycles in order to reduce the overall environmental impact.

San Marco Group was one of the first companies that offered water-based solutions for enamels and stains back in 1982 with the Unimarc Line and since then the pursuit has continued towards eliminating from its formulations raw materials considered hazardous to humans and the environment.

The Greenspirit line was developed in 2009: a selection of high-tech natural products for bioconstruction with low environmental impact.

In 2010 San Marco Group has begun using the LCA methodology to understand the environmental performance of its products and to analyze their strengths and weaknesses. The holistic view of LCA convinced San Marco Group to acquire internally skills on the methodology and its application, with the ambitious goal of carrying out the LCA analysis of all the main products.



The LCA studies conducted enable San Marco Group to get a picture of its products from an environmental point of view, and to take actions of eco-design, both through actions for the improvement of its processes, and through the involvement of the supply chain in a virtuous circle. Moreover, the application of LCA in 2011 has allowed San Marco Group to achieve the certification EPD, or Environmental Product Declaration, for three products.

After using the LCA methodology for 4 years and having studied more than 40 products, San Marco Group has created its own LCA calculation system, reviewed by the certification body CSQA in March 2014 and in July 2015.

The LCA calculation method San Marco Group is the basis for the environmental data sheets of San Marco Group products. The environmental data sheets are environmental identity cards for the products, describing the basic parameters of the study and the results, as well as other environmental information (LEED, VOC, etc.).

On June 2018 San Marco Group obtains the EPD process certification. This certification allows the independent EPD issue, every EPD is internally verified and the EPD process is yearly verified by the certification body. San Marco Group LCA calculation system has been adapted to the International EPD System and to the PCR requests, for instance implementing the control procedure requested.

1.4 Product description

The object of this EPD is the thermal insulating coating system Marcotherm EPS (expanded polystyrene insulating panel).

The Marcotherm system is composed of several elements with relative packaging (Tables 1-3). San Marco Group produces the finish (Acrisyl KP1.5) and the primer in its plant in Marcon (VE). The adhesive is manufactured by the plant Eurobeton in Latisana (UD). Eurobeton is a corporate which is part of San Marco Group, nominal group becoming SpA in 2019. Insulating materials and accessories are produced by partner companies in their respective production plants.

The Marcotherm system and its components of the San Marco Group brand do not contain substances listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorisation”.

The representative thickness of the Marcotherm thermal coating system is 14 cm. Adhesive, mesh, dowels, primer and finishing coat quantities refer to technical datasheet and are not based on measurements during the application phase.

The UN CPC code is 54 “Construction services”.

1.5 Marcotherm EPS system components

Marcotherm EPS system	Material	Weight (kg)	Weight (%)
Marcothem Adhesive	Adhesive in powder	7,30	56,1
EPS PORON 036 T100 Panel	EPS	2,17	16,7
Acrisyl KP 1.5	Finishing coat	3,00	23,1
Dowel with steel nail 190	PP/ PA6+GF/Steel	0,25	1,9
Mesh R117	Fibre glass	0,16	1,2
Marcotherm Primer	Primer	0,13	1,0
Total		13,01	100,0

Table 1: Components weights of 1m² of Marcotherm EPS system.

Packaging per component	Adhesive (kg)	EPS (kg)	Acrisyl (kg)	Dowel (kg)	Mesh (kg)	Primer (kg)
Component	25	1,09	25	0,044	8,25	18
Steel	-	-	0,056	-	-	0,055
Paper	0,091	-	0,001	-	-	0,005
Cardboard	-	-	-	0,001	-	-
Wood	0,563	-	-	-	-	-
PE	0,019	0,003	0,003	-	0,018	-
PP	-	-	0,668	-	-	0,731
Total packaging	0,672	0,003	0,728	0,001	0,018	0,791

Table 2: Weights of component packaging of Marcotherm EPS system.

Packaging for 1 m ² of Marcotherm EPS system	Weight (kg)	Weight (%)
Steel	0,007	2,4
Paper	0,027	8,9
Cardboard	0,006	2,1
Wood	0,164	54,4
PE	0,012	4,0
PP	0,085	28,2
Total	0,302	100,0

Table 3: Packaging weight for 1 m² Marcotherm EPS system.

2. Environmental Impact Declaration

2.1 Declared unit

The declared unit is 1 m² of thermal insulating external coating system, with a representative thickness of 14 cm.

2.2 System boundaries

The present EPD is a declaration “from cradle to gate with options” (PCR 2019:14 v1.0). The system boundaries of the LCA of Marcotherm include production of raw materials, manufacturing of semi-finished products and of the components of the coating system (A1), their transport (A2), San Marco Group production (A3), and end of life (C2-C4). Packaging disposal is not considered because part of the application phase (A5) not included in this EPD.

Distribution (A4), installation of the coating system (A5), use phase (B1-B7) and demolition phase (C1) are excluded.

More specifically, as illustrated in Figure 1, the production phase (A1-A3 modules) includes raw materials, their transportation to suppliers and to San Marco Group, components and their packaging production. The system components not produced by San Marco Group (panel, mesh and dowels) are directly sent by the producer to the building site. The following processes take place in the manufacturing phase: the production (through the use of a mechanical mixer for liquid products), internal transfers with electric vehicles, washing operations, packaging with primary packaging materials, palletization, storage of the products, scrap production and disposal. Transport of materials from suppliers to San Marco Group, energy and water consumption, and waste treatment are included in the production process.

End-of-life phase (C2-C4 modules) include waste treatment of all Marcotherm system components with relative transportation.

Module D considers benefits and impacts related to the recovery of steel from dowels and of polystyrene from panel in terms of recycled materials use in place of virgin materials (D1) and the recovery of polystyrene through incineration with energy recovery (D3). Recovery of plastics from dowels is considered negligible. It is assumed that the recycled material replaces a material of the same origin. Quality-correction factor is assumed equal to 1 for steel and polystyrene. There are no secondary fuels (D2 = 0) and the product does not produce landfill gas (D4 = 0).

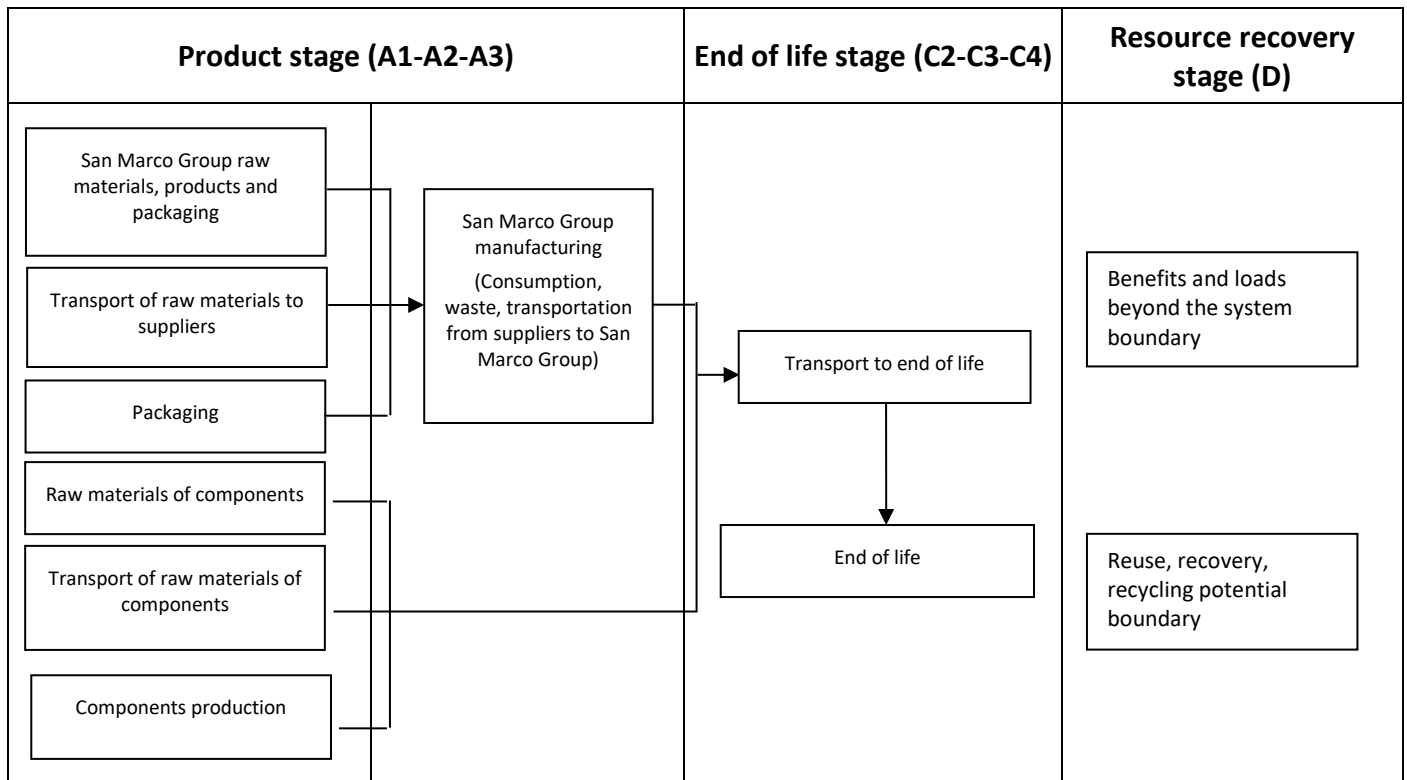


Figure 1: System boundaries of Marcotherm EPD.

Table 4: System boundaries of the Marcotherm EPD (ND: not declared module).

	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x
Geography	GLO	GLO	IT	-	-	-	-	-	-	-	-	-	-	IT	IT	IT	IT
Specific data used	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-

2.3 Time boundaries

Primary data come from San Marco Group and refer to the year 2021.

2.4 Geographical representativeness

The San Marco Group production site is located in the municipality of Marcon, in the province of Venice, the Eurobeton production site is located in the municipality of Latisana, in the province of Udine. Since the components of the Marcotherm system are mainly produced, sold and used in Italy, this study refers to the Italian situation. The most significant processes from the ecoinvent database have been modified to make them more representative of the Italian situation by changing the energy mix.

2.5 Boundaries in the Life Cycle

In accordance with the PCR for “Construction products”, the following processes are excluded from the LCA: the construction of company buildings, the production of manufacturing equipment and other capital goods, personnel activities.

The contribution of infrastructure has not been excluded from the processes that already contained it, as for instance, those from the ecoinvent database.

2.6 Boundaries to nature and other systems

Wastewater treatment, transport and treatment of waste from the production process are included.

2.7 Electricity mix

The electricity mix of the production site in Marcon (VE) is made of 97% of electricity from the national grid and 3% of solar energy from photovoltaic panels installed by the company, whereas in Latisana (UD) electricity is 100% from the national grid. The national residual electricity mix has been used.

GWP-GHG of the upstream electricity used in the manufacturing process A3 is 0,392 kg CO₂ eq/kWh and 0,403 kg CO₂ eq/kWh (IPCC 2013 GWP 100a) respectively for the production site in Venice and Udine.

2.8 Allocation rules and cut-off

In the analysed system, there are no co-products, hence no allocation has been applied.

“Cut-off” approach has been applied for end-of-life allocation. Raw materials and manufacturing processes are included for virgin resources. No allocation is made for materials subject to recycling. The recycling process is included for the input of recycled resources. The outputs subject to recycling are considered inputs for the next life cycle.

As for internal reuse (closed-loop), like for pallets, benefits have been allocated to the life cycle of the San Marco Group products.

Mass-based allocation has been applied for production plant consumption.

No cut-off rules have been applied.

2.9 Data quality

Primary data were collected and provided by San Marco Group. Secondary data have been used for all processes for which primary data were not available. Primary data have been used for the fundamental aspects of the study, such as energy and water consumption in production plants and weight of the main components of the Marcotherm system as well as the composition of the San Marco Group products.

Secondary data mainly refer to the ecoinvent v3.8, cut-off by classification database. Secondary data from literature were used to model missing substances in the reference database, considering temporal, geographical and technological coverage.

Data quality has been evaluated based on the pedigree matrix criteria.

3. Environmental impact indicators

For the environmental performance assessment of products, the LCIA method developed according to the EN 15804:2012+A2:2019 standard has been used.

The following Tables show environmental impacts of the life cycle of 1 m² of Marcotherm EPS system.

Results are reported per declared module.

1 m ² Marcotherm EPS		Unit	A1	A2	A3	C2	C3	C4	D
Impact category	Climate change - Total	kg CO ₂ eq	1,79E+01	3,36E-01	3,04E-02	1,07E-01	0	4,96E-01	-6,91E-01
	Climate change - Fossil	kg CO ₂ eq	1,77E+01	3,36E-01	2,86E-02	1,07E-01	0	4,95E-01	-6,80E-01
	Climate change - Biogenic	kg CO ₂ eq	2,16E-01	3,01E-04	1,85E-03	9,72E-05	0	5,07E-04	-1,06E-02
	Climate change - Land use and LU change	kg CO ₂ eq	3,67E-03	1,34E-04	9,43E-06	4,24E-05	0	1,78E-05	-2,56E-05
	Ozone depletion	kg CFC-11 eq	1,09E-06	7,79E-08	2,20E-09	2,50E-08	0	3,35E-08	-3,05E-08
	Acidification	mol H ⁺ eq	6,09E-02	1,77E-03	7,11E-05	5,43E-04	0	6,01E-04	-2,19E-03
	Eutrophication, freshwater ²	kg P eq	1,74E-03	2,11E-05	4,02E-06	6,96E-06	0	3,88E-04	-4,89E-05
	Eutrophication, marine	kg N eq	1,08E-02	5,10E-04	1,61E-05	1,87E-04	0	3,37E-04	-3,56E-04
	Eutrophication, terrestrial	mol N eq	1,12E-01	5,60E-03	1,74E-04	2,04E-03	0	2,40E-03	-3,83E-03
	Photochemical ozone formation	kg NMVOC eq	6,77E-02	1,68E-03	5,47E-05	5,83E-04	0	6,97E-04	-1,88E-03
	Resource use, minerals and metals ²	kg Sb eq	6,85E-05	1,02E-06	2,45E-07	3,76E-07	0	1,58E-07	-8,08E-08
	Resource use, fossils ²	MJ	3,21E+02	5,09E+00	1,87E-01	1,63E+00	0	2,23E+00	-1,36E+01
	Water use (AWARE)	m ³	9,04E+00	1,59E-02	1,09E-02	4,92E-03	0	7,69E-03	-3,85E-01

² The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Table 5: Core environmental impact indicators of 1 m² of Marcotherm EPS.

1 m ² Marcotherm EPS		Unit	A1	A2	A3	C2	C3	C4	D
Impact category	Particulate matter	Disease incidence	5,88E-07	3,14E-08	1,17E-09	9,55E-09	0	1,19E-08	-2,21E-08
	Ionising radiation ¹	kBq ²³⁵ U eq	5,36E-01	2,59E-02	1,36E-03	8,40E-03	0	1,08E-02	-1,18E-02
	Ecotoxicity, freshwater	CTUe	1,13E+02	3,95E+00	3,16E-01	1,28E+00	0	2,15E+01	-2,55E+00
	Human toxicity, cancer ²	CTUh	8,58E-09	1,27E-10	5,74E-11	4,13E-11	0	1,86E-09	-3,49E-10
	Human toxicity, non-cancer ²	CTUh	1,27E-07	4,15E-09	3,46E-10	1,34E-09	0	6,36E-08	-2,24E-09
	Land use ²	Pt	3,75E+01	4,14E+00	1,28E-01	1,12E+00	0	8,11E+00	-2,97E-01

¹ This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

² The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Table 6: Additional environmental impact indicators of 1 m² of Marcotherm EPS.

1 m ² Marcotherm EPS	Unit	A1	A2	A3	C2	C3	C4	D
Climate impact (IPCC 2013)	kg CO ₂ eq	1,72E+01	3,33E-01	2,83E-02	1,06E-01	0,00E+00	4,91E-01	-6,52E-01

Table 7: Supplementary indicator for climate impact of 1 m² of Marcotherm EPS.

1 m ² Marcotherm EPS		Unit	A1	A2	A3	C2	C3	C4	D
Indicators for resource use	Use of renewable primary energy as energy carrier	MJ	1,06E+00	0	0	0	0	0	0
	Use of renewable primary energy resources used as raw materials	MJ	9,18E+00	6,87E-02	1,78E-02	2,30E-02	0	6,47E-02	-3,50E-01
	Total use of renewable primary energy	MJ	1,02E+01	6,87E-02	1,78E-02	2,30E-02	0	6,47E-02	-3,50E-01
	Use of non renewable primary energy as energy carrier	MJ	9,28E+01	0	0	0	0	0	0
	Use of non renewable primary energy resources used as raw materials	MJ	2,28E+02	5,09E+00	1,87E-01	1,63E+00	0	2,23E+00	-1,36E+01
	Total use of non renewable primary energy resource	MJ	3,21E+02	5,09E+00	1,87E-01	1,63E+00	0	2,23E+00	-1,36E+01
	Use of secondary material	kg	7,08E-02	0	0	0	0	0	0
	Use of renewable secondary fuels	MJ	0	0	0	0	0	0	0
	Use of non renewable secondary fuels	MJ	0	0	0	0	0	0	0
	Net use of fresh water	m ³	2,29E-01	5,73E-04	-3,31E-02	1,82E-04	0	2,94E-03	-9,60E-03
Indicators describing waste production	Hazardous waste disposed	kg	1,69E-04	1,27E-05	5,71E-06	4,27E-06	0	2,19E-06	-8,07E-06
	Non-hazardous waste disposed	kg	1,33E+00	3,22E-01	2,23E-02	8,41E-02	0	1,08E+01	-1,13E-02
	Radioactive waste disposed	kg	2,60E-04	3,45E-05	7,70E-07	1,10E-05	0	1,47E-05	-4,70E-06
Indicators describing output flows	Components for re-use	kg	0	0	0	0	0	0	0
	Materials for recycling	kg	0	0	0	0	0	2,14E+00	0
	Materials for energy recovery	kg	0	0	0	0	0	0	0
	Exported energy	MJ	0	0	0	0	0	3,76E+00	0

Table 8: Indicators for resource use, waste production and output flows of 1 m² of Marcotherm EPS.

Differences versous previous version

2020-09-08 Version 1

2023-01-20 Version 2

New verification: increase of >10% of one environmental indicator (Ozone depletion) due to corrected energy consumption for insulating panel production.

4. Company and programme information

4.1 San Marco Group SpA

The Life Cycle Assessment (LCA) study and this EPD were created by the Product Safety Department of San Marco Group SpA, in collaboration with 2B Srl (www.to-be.it). The company contact details are:

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4.2 Programme information

Programme	The International EPD® System. For further information: www.environdec.com
Address of Program Operator	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website	www.environdec.com
E-mail	info@environdec.com

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 Construction products, version 1.0
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact .
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input checked="" type="checkbox"/> EPD process certification <input type="checkbox"/> EPD verification
Third party verifier: CSQA, Via s. Gaetano, 74 - 36016 Thiene (Vi), Tel. 0445 313011 - Fax 0445 313070, csqa@csqa.it , www.csqa.it Accredited by: Accredia
Procedure for follow-up during EPD validity involves third party verifier: <input type="checkbox"/> Si <input checked="" type="checkbox"/> No

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

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804:2012+A2:2019 and ISO 14025.

It is specified that it is not pertinent, in the case under study, the use of PCR relating to "Insulation materials" and, therefore, of the related functional unit. Those PCR define the category as: *"The product category referred to in this PCR includes all thermal insulation products (e.g. panels, slabs, bulk materials, etc.) for building purposes (e.g. in floor, roof, ceiling, walls, etc.)."* Despite the apparent affinity, in this specific case, an entire product system is considered. The product system consists, in addition to the insulating materials, also of other elements such as adhesive, mesh, anchors and finishing. Therefore, the set of components have not only insulating but also structural, decorative and protective functions.

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