

Environmental Product Declaration

Intonachino Minerale GF, in 25 Kg packages

Tuttorestauro - Greenspirit Line

Colorificio San Marco SpA



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1. The Company and the Product

Colorificio San Marco SpA has been working to quantify the environmental impact of some of its products in order to stimulate research for improving technical and environmental performance.

In this regard, Colorificio San Marco has begun the LCA (Life Cycle Assessment) study so as to obtain EPD (Environmental Product Declaration) certification, beginning with the products from the Greenspirit line, a line of products that combines tradition and innovation, natural materials and technically advanced solutions, united by care for the environment.

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

1.1 Colorificio San Marco SpA

Colorificio San Marco is part of the San Marco Group which, with its 7 manufacturing facilities around the world and 6 brands, has become a leader in the paint and coatings sector for professional construction in Italy.

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

Outside of 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 make itself 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 the Colorificio San Marco's company policy. This is why Colorificio San Marco is continuously trying to improve the quality of its products and its production cycles in order to reduce the overall environmental impact.

Colorificio San Marco was one of the first to offer water-based solutions for enamels and stains back in 1982 with the Unimarc Line and the search has continued since then towards the elimination of raw materials considered hazardous to humans and the environment from its formulations. Lead, chrome, cadmium and mercury based pigments and compounds have not been used in formulations for many years; compounds classified as carcinogenic, mutagenic or toxic to reproduction are not used. The Supernatural line was created in 2005: zero VOC, solvent-free, hypo-allergenic products for customers more observant of nature. The Greenspirit line was developed in 2009: a selection of high-tech natural products for bioconstruction with low environmental impact. The LCA study and EPD certification are another step along the Colorificio San Marco's path to sustainability.

1.4 Description of the Product

Intonachino Minerale GF is a white coloured mineral binder based exterior wall paint that provides a finish that is very similar to that of coloured plasters used on the buildings of Venice.

Intonachino Minerale GF creates a thick rough coating that is resistant to the effects of the weather and has good permeability. The product is therefore particularly suited for restoration work, even on buildings of historic-artistic interest.

The product's technical specifications are:

- Binder: air-hardening lime
- Solvent: water
- Maximum particle size: 0.7 mm
- Viscosity: paste
- Water permeability as per EN 1062-3: medium, $w=0.2 \text{ kg/m}^2 \text{ h}^{0.5}$
- Water vapour permeability as per EN ISO 7783-2: medium, $S_d=0.16$ for 1.4 mm thickness
- Drying time (at 25°C and 65% R.H.): to touch in 2- 3 hours; to recoat after 4-6 hours (depending on the applied thickness)
- Approximate spreading rate: 2.80 kg/m^2 for 2 coats on smooth surfaces with average absorption.

1.5 Description of the Production Process

The Colorificio San Marco's manufacturing process is structured in batches of approximately 3000 kg of product made inside fixed tanks. The components are added to the tank according to type, quantity and order given on the work sheet. The liquids are the first components to be used since the entire process is done through the use of mechanical mixing, which functions to disperse the solid phases and homogenize the product.

The quantities can be obtained using balances or volumetric measuring devices which are regularly checked. The statistical check of the packaged amount is done using balances subject to metric approval according to the indications on the work sheet.

Once it has been determined that the product conforms to the technical specifications, it is then packaged, palletized and stored. When being prepared for shipping, the product is wrapped with a polyethylene film. Colorificio San Marco uses a specific management software for managing the production process.

1.6 List of Materials

Table 1 lists the materials contained in a 25 kg package of Intonachino Minerale. These materials do not contain substances that are considered hazardous to health and the environment, except for the slaked lime which can cause serious damage to eyes (risk Xi R41).

Description of the product and materials (in kg)		Per 25 kg container (kg)	Per kg of product (kg)	Percentage (%)
Product	Calcium carbonate	4.441	0.178	17%
	Water	6.181	0.247	23%
	Slaked lime	5.781	0.231	22%
	Quartz sand	7.340	0.294	27%
	Organic aqueous dispersion	1.005	0.040	4%
	Other	0.251	0.010	1%
Primary packaging	Polypropylene	0.738	0.030	3%
	Steel	0.065	0.003	0%
	Paper	0.001	0.000	0%
Tertiary packaging	Wood	1.023	0.041	4%
	Polyethylene	0.018	0.001	0%
Total		26.845	1.074	100%

Table 1: List of materials for 25 kg package of Intonachino Minerale GF.

2. Environmental Impact Declaration

2.1 Functional Unit

The functional unit is composed of 1 kg of product, excluding the primary and tertiary packaging. The product is generally packaged in a 15 litre polypropylene container holding 25 kg of product.

2.2 System Boundaries

The LCA system boundaries for Intonachino Minerale GF include the following life cycle stages: raw materials, their transport, manufacturing, packaging, distribution and end of life treatment for packaging, that is “from cradle to gate” (Figure 1).

More specifically, the upstream processes for Colorificio San Marco manufacturing include the raw materials, the production of semi-finished products and auxiliary materials, their transport to suppliers and the transport of the materials to Colorificio San Marco. The main materials delivered to Colorificio San Marco are calcium carbonate, slaked lime, quartz sand and organic aqueous dispersion.

The following core processes are performed on site: production through the use of a mechanical mixer which functions to disperse the solid phases and homogenize the product, internal handling with electric vehicles, washing operations, packaging with primary and tertiary packaging materials, palletization, product storage, manufacturing scrap and their disposal. The consumption of energy and water, the emissions and treatment of waste are included in the production process of Intonachino Minerale.

The processes downstream from the manufacturing process include the distribution of packaged product and the end of life treatment of primary and tertiary packaging.

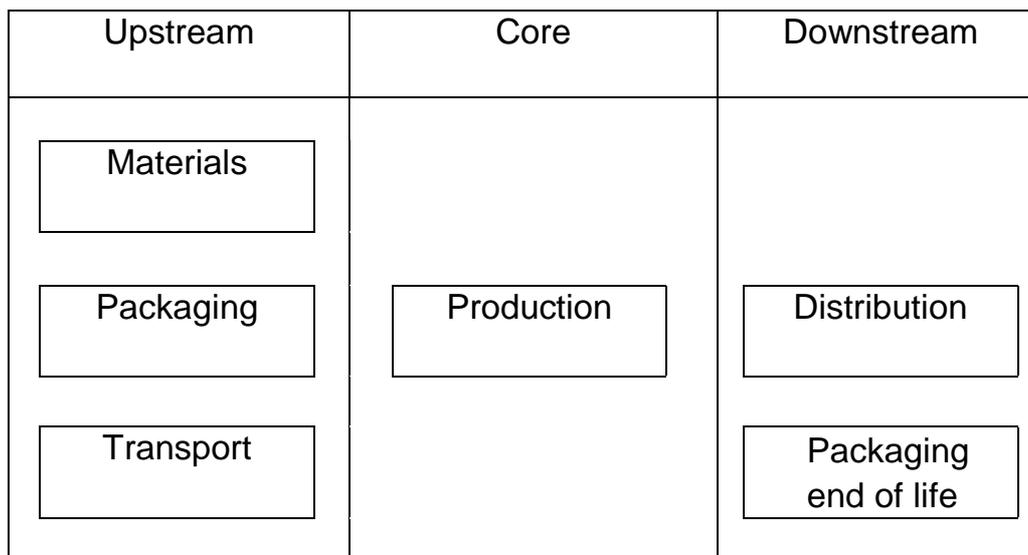


Figure 1: The LCA system boundaries for Intonachino Minerale GF.

Boundaries in time

The primary data comes from Colorificio San Marco and refers to the year 2009. The secondary data comes from the Ecoinvent v2 database and cover the period between 2004 and 2009.

Boundaries in the Life Cycle

As given in the PCR for “Paints and varnishes and related products” (draft PCR), the following processes are excluded from the LCA: the construction of buildings and infrastructure; the production of manufacturing equipment and other capital goods; personnel activities. The usage and the end of life stage for the finished product are also excluded.

Boundaries to nature and other systems

The emissions to air, the treatment of wastewater and waste from the production process and their transport were included in the LCA. As indicated in the PCR “Paints and varnishes and related products”, a transport of 1000 km by lorry (>32t RER) was assumed for the distribution of the product. The CO₂ credits in the renewable raw materials (wood, paper) were excluded from the LCA.

Geographical Boundaries

The manufacturing site is within the city of Marcon, in Venice province in Italy. The packaging materials are made in Italy, like the majority of the raw materials (> 95%). The product is sold both in Italy and abroad.

Allocation Rules

The raw materials and manufacturing processes are included in the virgin resources. No allocation is made for the materials that can be recycled. The recycling process is included for the input of the recycled resources. The outputs subject to recycling are considered outputs for the next life cycle. The allocation based on mass criteria was applied to the consumption of energy and water, as well as the emissions and treatment of waste.

2.3 Data Quality

The primary data of the LCA was obtained from Colorificio San Marco’s Marcon(VE) facility, while the secondary data comes from the Ecoinvent v2 database. The LCA calculation was done using the SimaPro 7.2 software. Primary data was used for most of the processes (136 in all), such as for the materials (calcium carbonate, slaked lime, quartz sand and organic aqueous dispersion), the manufacturing process, the production of the container, the mean distribution (as indicated in the PCR) and the end of life treatment for the various packaging materials.

To make the data representative, some of the Ecoinvent v2 processes were adapted to the Italian situation by changing the energy mix (for example calcium carbonate, slaked lime).

The electrical energy mix used by Colorificio San Marco is made up of the Italian electric mix coming from the Ecoinvent v2 database (98.2%) and photovoltaic panels installed by the company (1.8%).

The various destinations were taken into consideration for the disposal of the primary and tertiary packaging (recycling: 43.0%), incineration: 10.4%, landfill: 46.6%) taken from ONR (Italian National Waste Observatory) statistical data. The packaging materials subject to recycling (a fraction of the 43%) are polypropylene, steel, paper and polyethylene. 84.6% of the wood from the pallets is reused (company data), while the disposable pallets (the remaining 15.4%) are recycled.

The secondary data was used for the following processes: steel handles, printing of the container, the label and treatment of the waste from the manufacturing process. In agreement with the PCR, the environmental impact associated with the secondary data do not exceed 10% of the overall environmental impact related to the life cycle of the product.

2.4 Environmental Impact Indicators

Table 2 reports the environmental impact indicators for the life cycle of Intonachino Minerale packaged in 25 kg containers. The environmental indicators are composed of 5 impact categories (global warming, ozone depletion, acidification, photochemical smog, eutrophication), the energy content (renewable and non-renewable), the consumption of resources (resources with and without energy content; renewable and non-renewable), the consumption of water, waste (hazardous and non-hazardous waste), the consumption of electricity during manufacturing and the emissions of toxic substances to air and water.

The environmental indicators represent the environmental impact for the life cycle of 1 kg of Intonachino Minerale (Table 2). The indicators are divided into the contribution of the upstream processes (materials, packaging, transport) from the Colorificio San Marco manufacturing process (production) and the downstream processes (distribution and end of life treatment of primary and tertiary packaging).

Intonachino Minerale (1 kg)				Upstream			Core	Downstream	
Environmental indicator		Unit	Total	Materials	Packaging	Transport	Production	Distribution	End of life
Impact category	Global warming	kg CO ₂ eq	0.556	0.244	0.108	0.023	0.042	0.130	0.010
	Ozone depletion	mg CFC-11 eq	0.045	0.014	0.005	0.003	0.005	0.019	0.000
	Photochemical smog	g PO ₄ eq	0.175	0.076	0.040	0.004	0.035	0.020	0.000
	Acidification	g SO ₂ eq	1.661	0.448	0.327	0.109	0.172	0.603	0.002
	Eutrophication	g PO ₄ ⁻³ eq	0.571	0.127	0.125	0.030	0.054	0.166	0.069
Energy content	Non-renewable	MJ eq	9.081	2.683	3.214	0.381	0.626	2.171	0.006
	Renewable	MJ eq	0.361	0.059	0.212	0.005	0.060	0.025	0.000
Consumption of resources	Non-renewable with CE	kg	0.207	0.061	0.073	0.009	0.015	0.049	0.000
	Renewable with CE	kg	0.010	0.001	0.009	0.000	0.000	0.000	0.000
	Non-renewable without CE	kg	1.028	0.813	0.011	0.025	0.003	0.173	0.003
	Renewable without CE	kg	9.628	3.786	3.139	0.177	1.478	1.037	0.011
Waste	Non-hazardous	kg	0.034	0.002	0.003	0.000	0.013	0.001	0.015
	Hazardous	g	0.345	0.027	0.036	0.009	0.008	0.052	0.212
Other	Water consumption	kg	9.628	3.786	3.139	0.177	1.478	1.037	0.011
	Consumption of electricity	MJ eq	n.a.	n.a.	n.a.	n.a.	0.252	n.a.	n.a.
	Toxic emissions (air, water)	g	0.135	0.051	0.020	0.004	0.013	0.023	0.023
	Materials subject to recycling	kg	0.026	0.000	0.000	0.000	0.005	0.000	0.021

Table 2: Intonachino Minerale (1 kg) environmental impact indicators.

3. Information about the Company and the Certifying Body

3.1 Colorificio San Marco SpA contact information

The Life Cycle Assessment (LCA) study and this EPD were created by the Product Safety Department of Colorificio San Marco SpA, in collaboration with Dr. Leo Breedveld from Studio 2B (www.to-be.it). The company references are:

Colorificio San Marco SpA

Attn. Dr. Marta Geremia

Via Alta 10, 30020 Marcon (VE), Italy

e-mail: sicurezza.prodotti@sanmarcogroup.it

website: www.san-marco.it

3.2 Certifying Body

Document valid until: 2012-01-11.

Draft PCR: version 1.0 available on the website of the International EPD Consortium (IEC):

www.environdec.com

Independent verification of the declaration and data, according to ISO 14025:2006

Internal External

Third party verifier:

CSQA Certificazioni Srl

Via San Gaetano n. 74, 36016 Thiene (VI), Italy

Tel: +39 0445-313011 – Fax: +39 0445313070

www.csqa.it

Accreditation number : 004H rev. 0

3.3 Other Information

This EPD and the reference PCR (draft PCR “Paints and varnishes and related products”) are available on the website of the Swedish Environmental Management Council (www.environdec.com).

Comparisons between EPDs for paints shall be done carefully, given the variations in the system boundaries and the data sources used. The EPDs created with different parameters therefore have a limited comparability. Declarations recorded in different EDP programmes (ISO 14025:2006), may not be comparable.

3.4 Bibliography

- ISO 14025:2006. Environmental labels and declarations, type 3 environmental declarations, principles and procedures (www.iso.org).
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- Ecoinvent, 2010: Website of the "Swiss Centre for Life Cycle Assessment", provider of the Ecoinvent v2 database (www.ecoinvent.ch).
- PRé Consultants, Netherlands. SimaPro software version 7.2 from 2010 (www.pre.nl).