

FORMA

DECORATIVE BASE COAT PUTTY FOR INTERIORS

series 340

Colorificio San Marco SpA gives priority to environmental protection and safety in the workplace. For this reason, Colorificio San Marco constantly seeks to improve the quality of its products and their production cycles in order to reduce the overall impact on the environment and ensure quality and safety for customers.

This environmental data sheet shows the environmental information of FORMA: LCA, LEED and other information.

FORMA is a base coat putty specifically formulated for the decoration of surfaces in indoor environments. Easy to apply, it can be used with various techniques and processing tools, it allows various aesthetic results, two and three dimensional.

Thanks to the structure of FORMA depending on the application technique used it can be obtained valuable and original decorations.

The use of FORMA and ROXIDAN, decorative finish with oxidized effect, allows the easy creation of very contemporary and refined effects. It can be quickly created very realistic or abstract surfaces, with no limits no longer tied to the material itself but to the refined aesthetics.

FORMA is also an excellent starting point for the realization of various decorative forms with all the decorative finishes.



LIFE CYCLE ASSESSMENT

Life Cycle Assessment (LCA) is a tool to quantify the environmental impact of a product or service throughout its entire life cycle. The LCA methodology, as defined by ISO 14040/44 [1-2], consists of four phases:

- goal and scope definition
- inventory analysis
- impact assessment
- interpretation

The LCA calculation method of San Marco has undergone a critical review by a third part auditor [3].

Goal and scope

The **goal** of this LCA is to provide transparency about the environmental performance of FORMA, to create improvement options and support environmental communication. The functional unit is 1 kg of paint including packaging, with a spreading rate of 0,8 kg/sqm according to the thickness. This LCA is a "from cradle to gate with options" study. The **system boundaries** include raw materials, their transportation, processing, packaging and the product and its packaging disposal. Distribution, application, use phase and demolition are excluded because these phases are highly variable.

Inventory analysis

Primary data are used to the most significant processes, like the paint recipe, packaging and factory consumptions and emissions. Data refer to 2014 and are collected at the San Marco Group's factories located in Marcon (VE), Latisana (UD), Forlì, Montemarciano (AN) it refers to the type "BIANCO" in the 25 kg size (code 3400019/25). The end of use of the product and his packaging refers to the Italian situation. Secondary data originate from the ecoinvent v3.1 database [4]. The LCA calculations are performed with the LCA software SimaPro 8.1 [5].

Impact assessment

Life cycle impact assessment has been done with the method **PCR 2012:01 v2.0. "Construction products and cpc 54 construction services"**[6], as indicated in the EPD programme of the International EPD Consortium. This method consists of different environmental indicators including the Carbon Footprint, energy content, material resource consumption, water consumption and waste. Table 1 shows the LCA results.

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Table1: LCA results.

	Unit	Total	Upstream (A1)	Core (A2-A3)	Downstream (A4-A5-B-D)	Downstream (C2-C3-C4)	
Impact categories	Global warming	kg CO ₂ eq	0,780	0,547	0,136	n.a.	0,098
	Ozone depletion	mg CFC-11 eq	0,063	0,041	0,020	n.a.	0,002
	Acidification of land and water	g SO ₂ eq	3,140	2,550	0,560	n.a.	0,030
	Eutrophication	g PO ₄ ³⁻ eq	4,013	1,227	0,398	n.a.	2,389
	Photochemical ozone creation,	g C ₂ H ₄ eq	0,241	0,211	0,024	n.a.	0,007
	depletion of abiotic resources (elements)	mg Sb eq	1,739	1,476	0,258	n.a.	0,005
	depletion of abiotic resources (fossil)	MJ	12,986	11,146	1,776	n.a.	0,064
Resource consumption	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	1,066	1,669	0,143	n.a.	-0,746
	Use of renewable primary energy resources used as raw materials	MJ	-	-	-	n.a.	-
	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	1,066	1,669	0,143	n.a.	-0,746
	Use of non- renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	14,096	12,084	1,938	n.a.	0,074
	Use of non- renewable primary energy resources used as raw materials	MJ	-	-	-	n.a.	-
	Total use of non- renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	14,096	12,084	1,938	n.a.	0,074
	Use of secondary material	kg	0,000	0,000	0,000	n.a.	0,000
	Use of renewable secondary fuels	MJ	0,000	0,000	0,000	n.a.	0,000
	Use of non-renewable secondary fuels	MJ	0,000	0,000	0,000	n.a.	0,000
	Direct and indirect consumption of fresh water	m ³	0,005	0,004	0,001	n.a.	0,000
Waste disposal	Hazardous waste disposed	kg	0,010	0,005	0,005	n.a.	0,000
	Non-hazardous waste disposed	kg	0,838	0,031	0,078	n.a.	0,729
	Radioactive waste disposed	kg	0,000	0,000	0,000	n.a.	0,000

Interpretation

The LCA results indicate that the largest contributions come from upstream processes (i.e. raw materials). The global warming potential of 1 kg of FORMA is 0.78 kg CO₂ eq and its water consumption is 5 litres. The negative value of renewable energy content is caused by the pallet reuse.

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LEED

LEED means Leadership in Energy and Environmental Design. It is a voluntary program that provides third-party verification of green buildings. It provides building owners and operators a tool to understand their building's environmental performance and to create healthy indoor spaces.

In order to obtain LEED certification, projects must satisfy prerequisites and earn points (there is a threshold). The number of points the project earns determines its level of LEED certification.

LEED is a certification system that deals with the environmental performance of buildings based on overall characteristics of the project. Although LEED does not certify products and services of individual companies, products and services do play a role and can help projects with credit achievement.

The table below shows FORMA potential contribution to the different **LEED credits** of the LEED 2009 Rating System for New Construction and Major Renovations [7] and of LEED v4 Building Design and Construction [8]. Table 2 shows the possible contribution of the paint to potential credits, if used properly.

Table 2: Potential LEED credits.

LEED 2009 Credits	Description	Possible points
MR credit 5	Regional Materials	1-2 points
IEQ credit 3.2	Construction Indoor air quality management plan	1 point
IEQ credit 4.2	Low-Emitting Materials Paints and Coatings	1 point
LEED v4 Credits	Description	Possible points
MR credit	Building Life-Cycle Impact Reduction	1-5 points
IEQ credit	Interior Lighting	1-2 points

Colorificio San Marco does not guarantee that credits will be obtained by projects pursuing LEED certification. The designer or engineer will need to evaluate and verify if the project complies with the LEED requirements.

OTHER INFORMATION

VOC Dir. 2004/42/EC : label [9]

Limit value EU (Dir. 2004/42/EC)

Cat . L: Decorative effect coatings (water-base): 200 g/l (2010)

FORMA Contains max: 200 g/l VOC

VOC Dir. 2004/42/EC - actual content (no tinting and no dilution) [10]

< 9 g/l of VOC

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ECODESIGN INDEX

Counter of ecodesign activities affecting the coating, accomplished by the company.

N°	Activity item	Date
1°	First Issue	Mar 2016

References

- [1] ISO 14040, 2006: Environmental management, Life cycle assessment, Principles and framework. CEN, EN ISO 14040:2006 (www.iso.org).
- [2] ISO 14044, 2006: Environmental management, Life cycle assessment, Requirements and guidelines. CEN, EN ISO 14044:2006 (www.iso.org).
- [3] EN 15804, 2014: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products (www.cen.eu)
- [4] Ecoinvent, 2014: Database ecoinvent v3.1. Swiss Centre for Life Cycle Assessment, (www.ecoinvent.ch).
- [5] PRé, 2015: LCA software SimaPro 8.1.0 PRé Consultants, the Netherlands (www.pre-sustainability.com).
- [6] PCR 2012:01 v2.0 "Construction products and cpc 54 construction services". Product Category Rules (PCR) for preparing an environmental product declaration (EPD) for construction products and construction services, the Swedish Environmental Management Council (www.environdec.com).
- [7] USGBC, LEED 2009 Rating System for New Construction and Major Renovations (www.usgbc.org/leed)
- [8] USGBC , LEED v4 Building Design and Construction (www.usgbc.org/leed)
- [9] [10] Directive 2004/42/CE of the European Parliament and of the Council on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC (21 april 2004)