



SILANCOLOR SYSTEM

Silicone-based coatings





SILICONE-BASED COATING SYSTEMS
FOR THE PROTECTION AND DECORATION
OF MASONRY.

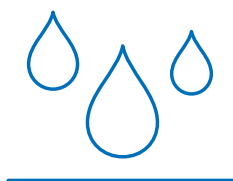
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Highly water-repellent
and breathable finishes

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Water: main cause of masonry deterioration

Water in all its states

Water exists in nature in various states: **gas** (water vapour), **liquid** (rain) and **solid** (ice). The continuous transition from one state to another is called the **hydrological cycle**. As a fundamental element for life on earth, water is also the main **cause of the rapid degradation of surfaces in construction**.

The degradation of surfaces



Bleaching and chalking

Calcium carbonate is present in considerable quantities in cementitious substrates and is transformed by acid rain into calcium sulfate (gypsum). This process results in **surface bleaching and chalking**.



Salt efflorescence

Rainwater which penetrates inside unprotected masonry releases the salts in it and brings them to the surface in the form of **whitish crystals**, the **salt efflorescence**.



Plaster cracks

The crystallizing salts may increase up to 10 times the volume they occupy in the liquid state. Rain produces continuous cycles of hydration and crystallization of salts that lead to **plaster cracks formation**.



Algae and mould

The persistence of moisture on masonry creates an ideal habitat for the proliferation of **algae** and **mould** and facilitates their formation on the surface.



Detachments and flaking

Water absorbed by masonry, changing from liquid to gaseous state, produces vapour pressure. This change of state, when the finish is not sufficiently breathable, can cause **detachment** or **surface flaking**.



Silancolor solutions

Silancolor System

External and internal painting cycle that provides protection of wall substrates from chemical aggression, UV rays and moisture in general. It does not alter the substrate's breathability and makes it highly water-repellent.

Silancolor AC System

Acrylic silicone-based finish that achieves an ideal balance between the performance of the silicone-based and acrylic components. As an advantage, it offers more intense and vivid colours.

Main common features of the systems

The main common characteristics (with different levels) between the two systems are water repellency, breathability, low dirt pick-up resistance and durability.

When to use Silancolor System

- When it is necessary to ensure **high vapour permeability**, such as in finishing cycles of dehumidifying systems.
- When **perfect compatibility with mineral substrates**, has to be maintained as in the finishing cycles of historic and architecturally valuable buildings.
- In interventions in areas that are particularly critical in terms of **climatic conditions**, such as very humid or brackish climates.

When to use Silancolor AC System

- When **colour designs with bright colours** are planned, not achievable in mineral products.
- If you want to ensure **durability and protection** with an **ideal cost/benefit ratio**.
- To offer a versatile solution that is **flexible**, easy and **fast to apply**.



Algae and mould: the **BioBlock** technology

Causes of degradation

Degradation of surfaces due to biological attack is increasingly common. There are several triggering factors.

- **Climatic conditions:** increasing weather phenomena and geographical areas affected by humid climates.
- **Pollution:** high-density urban housing or industrial areas with a high presence of dirt (mixture of dust and organic particulate matter), which, by settling on wall surfaces, nourishes algae and mould.
- **Building systems:** greater presence of mould inside homes, related to the “sealing” of buildings.

In order to counter this phenomenon, products have been developed to prevent its proliferation.

Evaluate the effectiveness of a product

In the field of paint products, **European standards EN 15457 and EN 15458** specify laboratory methods for testing the effectiveness of protective systems against mould and algae growth.

Compliance with these standards guarantees that the finishing product will be able to durably resist biological attack.

Braço de Prata
Lisbon - Portugal



Biological attacks

Microorganisms that constitute algae and mould can quickly infest the interior and exterior walls of buildings. **Algae** are mostly found outdoors where they find light and moisture. Not only they cause aesthetic damage (greenish stains and drippings), but also encourage the growth of mould, which can lead to subsequent structural damage. **Mildews** are fungi that proliferate with moisture. They reproduce both indoors and outdoors, in the latter case mostly over former algae colonies. In addition to leaving deep black circular stains, moulds are **particularly damaging structurally** as they develop filaments (hyphae) that can penetrate deep into the coating.

Mapei's solution for always protected façades

All **Mapei Plus** products meet the European standards and are tested by certified external laboratories.



In compliance with required regulations, **BioBlock** formulations have been proven to have **prolonged resistance against mould and algae**: to prove this, Mapei tested samples of **Silancolor** finishes under the most rigid conditions such as direct underwater immersion for up to 10 days and accelerated ageing with exposure to UV rays, high temperatures, rain and high humidity. These results were achieved through an **accurate selection of additives**, combining in perfect synergy all the **active ingredients** and their **modes of operation** within the product.

BioBlock, beyond the norm



Mapei has created **BioBlock**, a technology that can fight the formation of algae and mould and restore damaged surfaces. With their **wide spectrum of action**, BioBlock products solve many situations due to the presence of biocides which are effective on different strains of micro-organisms. In addition, the active ingredients are used in the **ideal concentration**, complying with the limits set by current regulations.

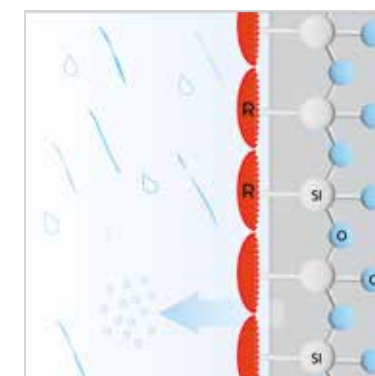


Silancolor System

DESCRIPTION

Silicone-based system.

Internal and external silicone-based system with high water repellency and high breathability. Ideal for the protection and decoration of all masonry. The system provides high protection from chemical aggression, UV rays and moisture in general, while maintaining the breathability of the substrate and conferring high water repellency.



CHARACTERISTICS



High
breathability



Resistant
to water



Certified
product



Resistant to rigid
weather conditions

BASED ON

Silicone resins in water dispersion

WHERE TO USE

**Protecting and decorating
all wall surfaces**

COLOURS

- White
- Mapei MasterCollection and EXtra Colour shade selection
- Shades obtainable with ColorMap® automatic tinting system

CERTIFICATIONS



Textured
coating



Paint

MAPEI TECHNOLOGIES



Plus products





Silancolor System

DropEffect: water slips away

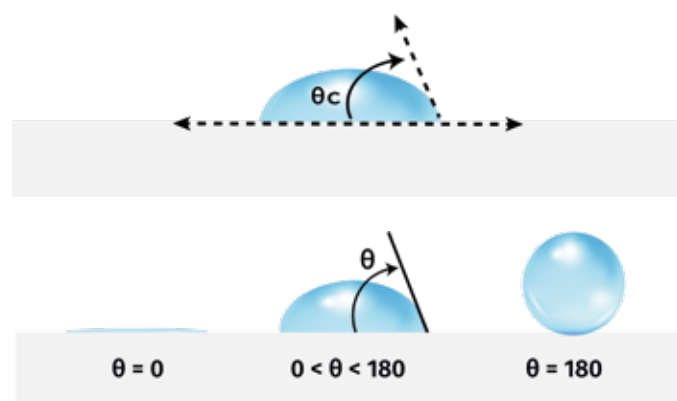


The angle formed by the meeting of the point where a liquid and solid intersect, is called contact angle. **If the contact angle is larger than 90°, the solid surface is considered hydrophobic.**

In silicone-based systems, the function of the silicone component is to create a contact angle with water in order to make them hydrophobic.

They are defined:

- **Hydrophobic** surfaces having a contact angle with water > 90 degrees.
- **Hydrophilic** surfaces with angles < of 90 degrees.



System advantages

The power of **Silancolor System** lies in creating, at the level of the masonry, an **ideal balance** between water in its liquid form (rain) and its gaseous form (water vapour).



Private villa
Downerry - United Kingdom



Silicone-based finishes

Once applied, silicone-based finishes form a 'micro-perforated' film with such tight meshes that **they do not allow water to enter**, but at the same time wide enough to **allow water vapour to pass through**. This characteristic **preserves the masonry intact over time**.

Water-repellent property

It is the ability of the paint film to resist the passage of water (rain, snow, condensation). To assess the degree of the water-repellent property of a wall finish, **EN 1062-3** is used. This standard makes it possible to determine the **quantity of water absorbed** per **unit of surface area** in a **given period of time**.

TEST METHOD ACCORDING TO EN 1062-3

The lower the absorption, the higher the water-repellency.

CLASS	W [kg/(m²·h0.5)]
W1 HIGH ABSORPTION	> 0.50
W2 MEDIUM ABSORPTION	≤ 0.5 and > 0.1
W3 LOW ABSORPTION	≤ 0.1



Products beyond the norm

The best class in terms of water-repellency is W3, which is the one with the lowest absorption, less than 0.1 kg/(m² h0.5). All products in the **Silancolor System** are W3-class and fully achieve this value.



Silancolor System

Breathability

Breathability is the ability of the paint film to allow water vapour to pass through.

To assess the degree of **water vapour permeability** of a wall finish, **EN ISO 7783** is used. This standard makes it possible to measure the mass of vapour transmitted by a surface in a given time, that is, the **degree of water vapour transmission V**. For a correct and full understanding of the technical data, and thus of products' performance in terms of breathability/vapour permeability, a number of parameters and their correlation must be considered.

Vapour permeability

The **vapour diffusion resistance factor** is **specific to each material** or product. It indicates **how much greater the resistance to vapour passage is compared to an air layer** at the same thickness, temperature and pressure conditions. The measurement unit is expressed in μ .

EXAMPLE OF VAPOUR PERMEABILITY	
	Resistance factor to vapour diffusion
SILANCOLOR PITTURA ZERO	600 μ
AIR	0 μ

Silancolor Pittura ZERO «resists» 600 times more than a layer of air, at the same thickness and environmental conditions.

Equivalent thickness

A measure that indicates to which air thickness, the application thickness of the material/product is equivalent. It is expressed in s_d .

EXAMPLE OF VAPOUR PERMEABILITY			
	Silancolor Pittura ZERO	Equivalence air thickness	$s_d = \mu \cdot s$ (m)
THICKNESS TO BE APPLIED	0.1 mm (0.0001 metres)	60 mm	$600 \times 0.0001 = 0.06$ m

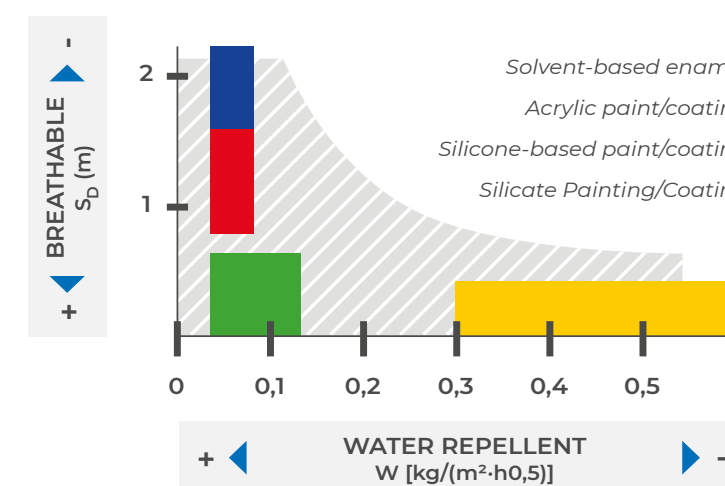
Silancolor Pittura ZERO thus offers the same resistance to vapour passage as 0.06 meters of air under the same temperature and pressure conditions.

La Serra Park
Castellana Grotte - Italy



Kunzel's chart

This chart provides an evaluation of the performance of a paint considering breathability and waterproofing properties. Ranking the different families of paint products, silicone-based products best meet these two characteristics.



TEST METHOD ACCORDING TO EN ISO 7783

The lower the strength, the greater the breathability.

CLASS	s_d (m)
V1 HIGH PERMEABILITY	< 0.14
V2 MEDIUM PERMEABILITY	≥ 0.14 and < 1.4
V3 LOW PERMEABILITY	≥ 1.4



Standard approved

According to EN ISO 7783, the best breathability or vapour diffusion resistance class is V1. All products in the Silancolor system are classified as V1.



Silancolor System Products

The **Silancolor System** consists of a complete range of products. **Prepare the surface** with, transparent primer **Silancolor Primer** and the coloured undercoat **Silancolor Base Coat**. As a final protection you can choose between a smooth paint, **Silancolor Pittura ZERO** or a textured coating, **Silancolor Tonachino**, available in different grain sizes.

UNDERCOAT

An undercoat that improves paint performance.



Silancolor Primer
Transparent Primer



Silancolor Base Coat
Coloured undercoat



Silancolor Primer Plus
Transparent Primer



Silancolor Base Coat Plus
Coloured undercoat

COLOUR

Coloured finishes that protect against atmospheric agents.



Silancolor Pittura ZERO
Smooth paint



Silancolor Tonachino
Textured coating



Silancolor Tonachino Plus
Textured coating



PRODUCT	TYPE	USE	GRAIN SIZE	BRUSH	ROLLER	SPRAY	TROWEL	CONSUMPTION/M ²	N° LAYERS	YIELD PER PACK	PACK	DILUTION WITH WATER	DENSITY
Silancolor Pittura ZERO	paint	internal and external						0.3-0.4 kg	2	60 m ²	20 kg	15 - 20 %	1.55
Silancolor Tonachino	textured coating	internal and external	0.7 mm			 (no airless)		1.7 - 2.0 kg	1-2	15 m ²	25 kg	1 - 2 %	1.65 - 1.95
			1.2 mm					1.9 - 2.3 kg	1	13 m ²			
			1.5 mm					2.2 - 2.6 kg	1	11 m ²			
			2.0 mm					3.0 - 3.5 kg	1	8 m ²			
Silancolor Tonachino Plus	textured coating	internal and external	0.7 mm			 (no airless)		1.7 - 2.0 kg	1-2	15 m ²	25 kg	1 - 2 %	1.65 - 1.90
			1.2 mm					1.9 - 2.3 kg	1	13 m ²			
			1.5 mm					2.2 - 2.6 kg	1	11 m ²			
Silancolor Base Coat	coloured undercoat	internal and external				 (no airless)		0.3 - 0.5 kg	1	50 m ²	20 kg	5 - 10%	1.58
Silancolor Base Coat Plus	coloured undercoat	internal and external						0.2 - 0.4 kg	1	65 m ²	20 kg	max 10%	1.6
Silancolor Primer	primer	internal and external						100 - 150 g	1	80 m ²	10 kg	--	1.01
Silancolor Primer Plus	primer	internal and external						100 - 300 g	1	50 m ²	10 kg	--	1.01



Silancolor AC System

DESCRIPTION

Acrylic silicone-based system.

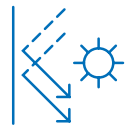
Acrylic silicone-based system with good water repellency and high colour performance. Ideal for the protection and decoration of all masonry. The system ensures intense and long-lasting colours while maintaining the breathability of the substrate.



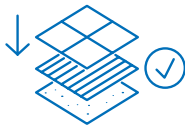
CHARACTERISTICS



Water resistant



UV resistant



Perfect adhesion to substrates



Wide colour range

BASED ON

Acrylic silicone-based resins in water dispersion

WHERE TO USE

Protection and decoration of all wall surfaces

COLOURS

- White
- Mapei MasterCollection and EXtra Colour selection
- Colours obtainable with ColorMap® automatic tinting system

CERTIFICATIONS



Textured coating



Paint

MAPEI TECHNOLOGIES



Plus products





Silancolor AC System

The great advantage of the **Silancolor AC system** lies in the possibility to obtain **more intense and vivid colours** compared to those achievable with “pure” silicone-based systems.

In recent years, traditional silicone-based products, which contain in their formulation an amount of **silicone-based resin** equal to about 40% of the total binder, have been joined by a new type of finish, the **ACrylic** silicone-based, specifically designed to give the option of choosing a finish that improves and overcomes the limitations of classic acrylic finishes.

Silancolor AC products are ideal for exterior and interior applications, both for restoration and on new surfaces. They turn out to be a highly economical solution in cases of projects involving a great number of square meters.

Silancolor AC Characteristics

- Water-repellent
- Good water vapour permeability
- Long-lasting protection
- High colour resistance
- Very low dirt retention
- Easy to apply
- Attractive finish effect
- A very wide range of colours can be obtained with the **ColorMap®** tinting system



Important Notice

In the case of dehumidifying plasters, prefer the use of pure silicone-based system **Silancolor**.

MŠ Ledec nad Sázavou
Czech Republic



A special product category

Mapei Research Center made it possible to create formulas that offer both **water repellency** and **good water vapour permeability**.

In this way, they resemble the excellent performance that is typical of the family of silicone-based finishes.

Excellent results have also been obtained in terms of colour: **Silancolor AC** system, unlike mineral products, allows **vivid and clean colours** to be obtained.

The durability of the colours themselves is great. They do not change over time.

All colours, including bright ones

Colouring pastes with organic pigments produce purer, lighter colours than those with iron oxides (inorganic pigments). However, they are more sensitive to UV rays and offer limited lightfastness, especially when used in dispersions with a high silicone-based resin content.

This problem does not occur with paints and coatings in the **Silancolor AC** range, thanks to the presence of a high-quality acrylic binder that **protects against UV degradation**.

In addition, all colours can be achieved with the Acrylic silicone-based hybrid system.





Silancolor AC System products

The **Silancolor AC System** uses the same **undercoat preparation** products as the **Silancolor System**, in the two versions: standard and Plus with BioBlock technology against algae and mould. There are two coloured finishes: you can choose between a smooth paint, **Silancolor Pittura AC** or a textured coating, **Silancolor Tonachino**, available in different grain sizes. The advantage of the Acrylic silicone-based system is the wide range of colours that can be achieved. The **Plus version** is resistant to mould and algae attack thanks to **BioBlock technology**.

UNDERCOAT

An undercoat that improves adhesion and performance of coloured finishes.



Silancolor Primer

Transparent Primer



Silancolor Base Coat

Coloured undercoat



Silancolor Primer Plus

Transparent Primer



Silancolor Base Coat Plus

Coloured undercoat

COLOUR

Coloured finishes with clean, durable colours that protect against atmospheric agents.



Silancolor AC Pittura

Smooth paint



Silancolor AC Tonachino

Textured coating



Silancolor AC Pittura Plus

Smooth paint



Silancolor AC Tonachino Plus

Textured coating



PRODUCT	TYPE	USE	GRAIN SIZE	BRUSH	ROLLER	SPRAY	TROWEL	CONSUMPTION/M ²	N° LAYERS	YIELD PER PACK	PACK	DILUTION WITH WATER	DENSITY
Silancolor AC Pittura	paint	internal and external						0.3-0.4 kg	2	60 m ²	20 kg	10 - 15 %	1.55
Silancolor AC Pittura Plus	paint	internal and external						0.3-0.4 kg	2	60 m ²	20 kg	10 - 15 %	1.55
Silancolor AC Tonachino	textured coating	internal and external	1.2 mm					1.9 - 2.3 kg	1	13 m ²	25 kg	1 - 2 %	1.7
			1.5 mm			(no airless)							
Silancolor AC Tonachino Plus	textured coating	internal and external	1.2 mm					1.9 - 2.3 kg	1	13 m ²	25 kg	1 - 2 %	1.7
			1.5 mm			(no airless)							
Silancolor Base Coat	coloured undercoat	internal and external						0.3 - 0.5 kg	1	50 m ²	20 kg	5 - 10%	1.58
Silancolor Base Coat Plus	coloured undercoat	internal and external						0.2 - 0.4 kg	1	65 m ²	20 kg	max 10%	1.6
Silancolor Primer	primer	internal and external						100 - 150 g	1	80 m ²	10 kg	--	1.01
Silancolor Primer Plus	primer	internal and external						100 - 300 g	1	50 m ²	10 kg	--	1.01



Silancolor Cleaner Plus

DESCRIPTION

Hygienising treatment in water solution for internal and external use, highly penetrating and resistant to mould and algae.

Silancolor Cleaner Plus is an active ingredients-based treatment, highly effective for cleaning and treating surfaces. It has a highly penetrating **curative action** that **protects against the biological attack of algae and mould**. It is the main component of the **Silancolor** façade protection system and should be applied before painting. Its perfect integration with other products ensures long-lasting results. It deeply heals by blocking algae and mould on affected surfaces.



Why choose Silancolor Cleaner Plus?

Inactivates existing moulds and prevents their growth

It cleans quickly and thoroughly and, together with the finishing system of **Silancolor Plus** line, forms a highly effective cycle for protecting wall surfaces against algae and mould, even if they are already present.

It is highly penetrative

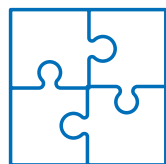
This wall surface hygiene treatment gets to the root of the problem, removing it and preventing algae and mould growth.

For internal and external use

Transparent and ready to use, **Silancolor Cleaner Plus** is odourless and does not contain solvents: it can also be applied in closed or poorly ventilated areas.

Combats moulds

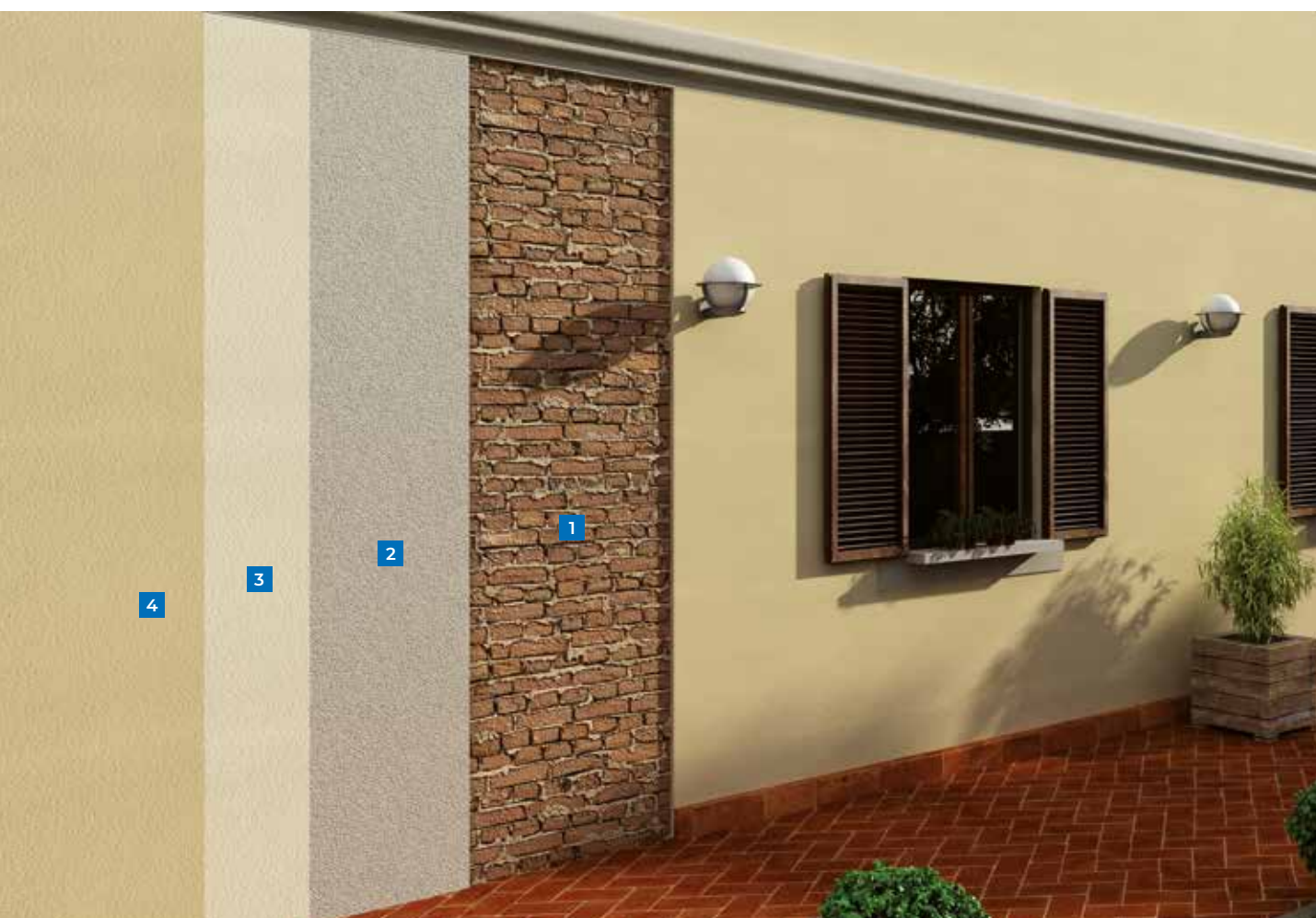
It contains a specific additive for the control of mould and algae growth, developed in the **Mapei** Research & Development Laboratories.



Synergy with Mapei systems

Effective and long-lasting solutions against humidity

Silancolor finishes act in perfect synergy with **Mape-Antique** or **PoroMap** dehumidifying systems, particularly for the rehabilitation of masonry affected by rising damp.



- 1 Existing masonry
- 2 **PoroMap Deumidificante**
Dehumidifying plaster
- 3 **Silancolor Base Coat**
Coloured silicone-based undercoat
- 4 **Silancolor Tonachino**
Silicone-based coating

All Silancolor systems are the ideal finish for:



Building
Products



Products for the restoration
of masonry buildings

Silancolor systems are the ideal coloured finish for several **Mapei** product lines. Their water-repellent and breathability properties, combined with a wide range of finishes and colours, not only improve efficiency but also optimally complement several lines by extending their durability over time and providing the ideal colouring for each project.



Certified sustainability

An increasingly low environmental impact

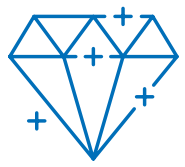
Silancolor products have **EPDs** (Environmental Product Declaration), environmental declarations certified by a third party (The International EPD System). The **EPD** describe the **environmental impacts of a product throughout its life cycle**, measuring impacts using the standardized LCA (Life Cycle Assessment) methodology. In addition, in **ZERO Line** products, CO₂ emissions measured along the life cycle have been offset through the acquisition of certified carbon credits in support of forestry protection projects. A commitment to the planet, to people and to biodiversity.



EPD certification



All **Silancolor** and **Silancolor AC** finishing systems are certified with **EPDs** and comply with international standards **ISO 14025**.



Project references



*Eurosuole
Civitanova Marche - Italy*



*Maestro Rodrigo Garden
Valencia - Spain*



*Palazzo Filangeri
Palermo - Italy*

EVERYTHING'S OK, WITH MAPEI



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