

# SmartCOVER $\mu$

GRAPHENE FINISHING

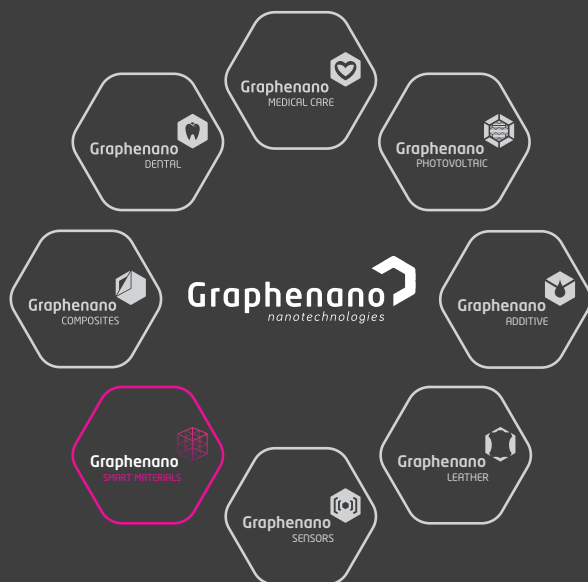
[graphenanosmartmaterials.com](http://graphenanosmartmaterials.com)

**Graphenano**  
SMART MATERIALS





# ABOUT US



**Graphenano Smart Materials** is a global pioneer in the manufacture of additives with graphene technology for high-performance and ecologically friendly advanced building materials.

It was founded in 2015 as a subsidiary of Graphenano group, the only company producing graphene on an industrial scale, as a result of a research and collaboration agreement with the Catholic University of Murcia (UCAM).

Currently, Graphenano Smart Materials is working together with the University of Castilla la Mancha (UCLM), the Instituto de Tecnología Cerámica de Valencia (ITC) and the Centro Tecnológico de la Construcción de Murcia (CTCON).



# WHAT IS GRAPHENE?



## It's a nanomaterial

Smaller size than or equal to one millionth of a millimeter.

## It's bidimensional

It only presents two dimensions because it is only one- atom- wide (10<sup>-9</sup> mm).

## It's pure carbon

As graphite\* and diamonds.  
Carbon atoms are tightly held together on an even surface, as it were a honeycomb.

- \* Graphite is composed of many graphene sheets, stacked up one over the other.

## GRAPHENE MAIN PROPERTIES



### Resistant

200 times stronger than steel



### Flexible

Up to 20% with no damage



### Biocompatible

Medical field application



### Conductive

Electrical & thermal conductivity better than copper



### Bidimensional

100.000 thinner than human hair



### Environmentally friendly

Sustainable & biodegradable



### Transparent

98% transparency, similar to glass



### Lightweight

1 m<sup>2</sup> weighs less than 1g







# WHAT IS SMARTCOVER?

**SmartCOVER** is a new formulation that includes an improvement of mechanical and environmental features of conventional micromortar by including graphene additive in its composition.

It is an innovative micromortar, graphene reinforced, achieving the highest qualities of hardness and resistance to sudden impacts and heavy traffic of people. Its resistance, elasticity and impermeability conditions are incomparable to traditional mortars and cements.

**SmartCOVER** is a decorative coating suitable for all types of surfaces. Its application thickness is a thin layer of 2 to 3 mm which provides it a great adhesion. The result is ongoing surfaces, free of cracks and joints, with marbling effect and with a great variety of colours and finishes.

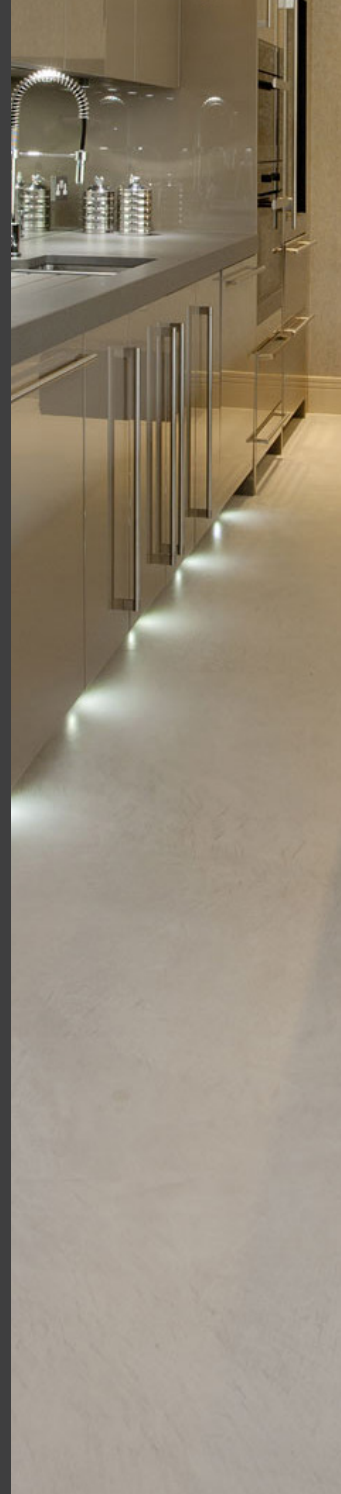
By not generating the annoying “rubble”, it can be applied directly to walls and floors, interiors and facades, swimming pools and showers, kitchen and bathroomy , it can be done over any kind of material like

such as cement, plaster, pladur (dry wall), tiles, marble, porcelain, wood, etc.

**SmartCOVER** is perfect for creating clean and pleasant aesthetic environments. It is very hygienic and highly recommended for sites that require maximum level of hygiene, such as hospitals and clinics, schools and nurseries, geriatric baths, restaurants and areas with perishable foods, showers in dressing rooms, etc.

Being pore free and having no joints, SmartCOVER does not require specific maintenance and, therefore, it has a fast, comfortable and simple cleaning.

The R&D of Graphenano Smart Materials is at the forefront in all manufacturing processes of cementitious coatings, cooperating with the largest chemical firms and maintaining a very high level of requirements for its raw materials





# ADVANTAGES WITH GRAPHENE



SmartCOVER has the same features and advantages as conventional micromortars in terms of quality and design, coupled with a series of technical improvements that are only possible thanks to the incorporation of graphene in its composition.

Graphene provides significant properties to SmartCOVER and makes it a product of high technical performance unprecedented in the construction market. Due to graphene, the SmartCOVER micromortar is stronger and resistant to impacts, has bactericidal and water-repellent properties and allows better workability of the material.



**Higher resistance**



**Hardness to impact**



**Water- repellent**



**Bactericide**



**Elasticity**



**Conductivity**



**Longer Durability**



**Better workability**



# SMARTCOVER SYSTEMS

Graphenano Smart Materials has developed three SmartCOVER systems with the best technical properties in the market. The three of them are cementitious coatings combined with polymers, fibers, aggregates, resins, pigments and graphene additive, but each one has specific characteristics depending on the needs of the surface type where they are applied.



## Sistema CLASSIC

**Micromortar with graphene** ideal for floors, walls and other innovative and sustainable surfaces. It ensures maximum resistance and hardness without neglecting the design.



## Sistema ECO

**Micromortar with graphene** for long transport, prepared and ready to use. Same features and application as the CLASSIC System but with greater ease of installation.



## Sistema AQUA

**Micromortar with graphene** perfect for wet areas and environments in contact with water. Specially designed to handle plenty of chlorine and salt.



## Sistema AQUA PLUS

**Graphene micromorter with high hydrophobic protection**, perfect in humid areas and environments in direct contact with water such as bathtubs, showers, swimming pools, saunas, etc. Specially prepared to withstand abundant loads of chlorine and salt maintained in direct and prolonged contact.



## Sistema HARD

**Graphene micromorter for high pedestrian traffic**, ideal for floors, walls and other surfaces of shopping centers, bars, restaurants, party venues, cinemas, etc. It guarantees great resistance to wear, abrasion and protection from stains without neglecting the design.



## Sistema INDUSTRIAL

**Graphene micromorter for industrial floors** with high traffic, ideal for floors in warehouses, warehouses, factories, etc. It guarantees great resistance to wear and abrasion, eliminates dust, facilitates cleaning and removes stains without neglecting the design.

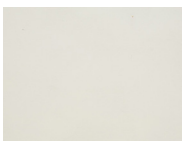


# COLOURS AND FINISHES

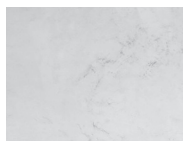
SmartCOVER provides finishes to any decorative style, which create original rooms with modern aesthetics, with high-quality surfaces, absolutely continuous and seamless.

SmartCOVER may have textures that imitate natural stone, spatial stone, slate, etc., being water-repellent and having an application in walls or exterior walls in order to give them a rustic look. Also, it can present smooth and uniform textures, waterproof and hygienic, where it is intended to achieve a clear and elegant style.

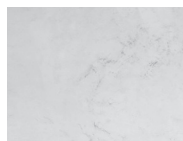
SmartCOVER pigmentation system allows a great variety of homogeneous colour combinations, solid and homogeneous, as well as matt, gloss or satin finishes



**G01** | White



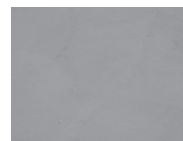
**G02** | Pale white 1



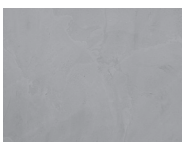
**G03** | Pale white 2



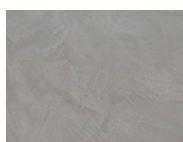
**G04** | Grey pearl



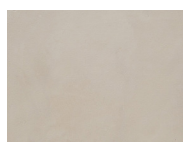
**G05** | Silver



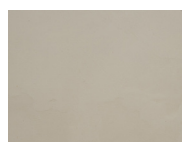
**G06** | Grey



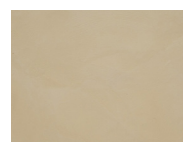
**G07** | Tin grey



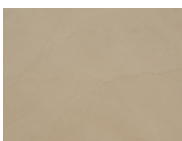
**G08** | Stone



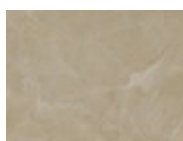
**G09** | Ivory



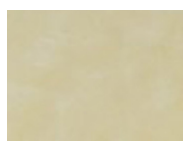
**G10** | Sand



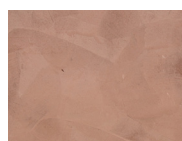
**G11** | Eartg



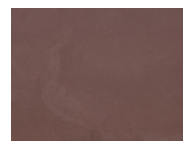
**G12** | Bateig stone



**G13** | Vainilla



**G14** | Clay



**G15** | Chocolate



**G16** | Wine



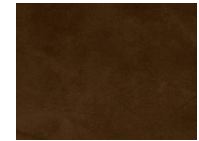
**G17** | Olive green



**G18** | Slate



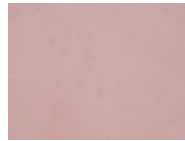
**G19** | Anthracite



**G20** | Argila



**G21** | Vermilion



**G22** | Pale pink



**G23** | Hagia



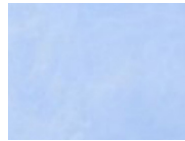
**G24** | Bordeaux



**G25** | Morago



**G26** | Sky blue



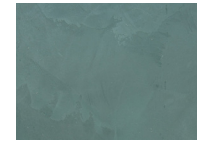
**G27** | Cobalt blue



**G28** | Royal blue



**G29** | Blue sapphire



**G30** | Greenish



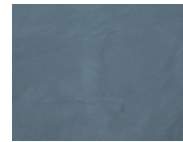
**G31** | Crystalline



**G32** | Apple



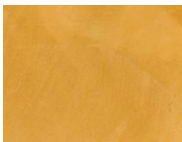
**G33** | Hunter green



**G34** | Navy



**G35** | Lemon yellow



**G36** | Ocher



**G37** | Mirabelle



**G38** | Salmon



**G39** | Jinjol



**G40** | Orange



**G41** | Scarlet



**G42** | Sesame



**G43** | Ruby red



**G44** | Brown

**\*NOTE:** The shade of the sample may vary from the final product.











# TECHNICAL PERFORMANCE

## ***UNE 48250: Abrasion Resistance. Taber Method.***

Results obtained using the Taber Method of 250 cycles with abrading wheels in resilient material and subsequent extrapolation at 1,000 cycles. 1,000 g weight on each arm of the abrasion tester.

Taber abrasion results	
SmartCOVER CLASSIC	0,1034 g
SmartCOVER ECO	0,1034 g
SmartCOVER AQUA	0,0434 g
SmartCOVER AQUA PLUS	0,0434 g
SmartCOVER HARD	0,0293 g
SmartCOVER INDUSTRIAL	0,0254 g

## ***DIN 52617: Determination of the water absorption coefficient of construction materials.***

Results obtained after testing using a graduated Karsten tube with an internal diameter of 25.5 mm. The absorption reading is taken at 10 and 60 minutes after the inside of the tube is filled with water.

Karsten absorbtion results	
SmartCOVER CLASSIC	0,196 kg/m <sup>2</sup> h <sup>1/2</sup>
SmartCOVER ECO	0,196 kg/m <sup>2</sup> h <sup>1/2</sup>
SmartCOVER AQUA	0,166 kg/m <sup>2</sup> h <sup>1/2</sup>
SmartCOVER AQUA PLUS	0,126 kg/m <sup>2</sup> h <sup>1/2</sup>
SmartCOVER HARD	0,174 kg/m <sup>2</sup> h <sup>1/2</sup>
SmartCOVER INDUSTRIAL	0,174 kg/m <sup>2</sup> h <sup>1/2</sup>



**UNE ENV 12633: Determination of the slip resistance of polished and unpolished flooring.**

Results obtained from pendulum skid testing (type 48-B0190/2 CONTROLS) using a 4S type rubber heel that travels over the surface and on a C scale. Record of the measurements of five successive readings that do not vary more than 3 units, as well as a further five measurements, after turning the test tube through 180°.

Slip resistance results*	
SmartCOVER* systems	R1
SmartCOVER* systems	R2
SmartCOVER* systems	R3

**\*NOTE:** Slip resistance performance can be personalised by the client in any of our SmartCOVER (CLASSIC, ECO and AQUA+ systems)

**UNE EN 14527:2006 + A1: 2010 Apdo.8.2.: Chemical resistance**

This test determines the resistance of finishes to certain chemical products. After placing the product on the surface and keeping it covered with a watch glass for 2 hours, the product should be removed without leaving a permanent stain.

Chemical & stain agents	Observed defects
Acetid acid 10 % v/v	No defects
Sodium hydroxide 5 % m/m	No defects
Ethanol 70 % v/v	No defects
Sodium hypochlorine 5 % active chlorine	No defects
Methylene blue 1 % m/m	Stain removed with water

**\*NOTE:** Test performed on the three SmartCOVER systems (CLASSIC, ECO and AQUA+) with the same result.



**UNE EN 13529: Determination of resistance to chemical attacks**

This test determines the resistance of finishes to chemical attacks by directly exposing the surface to the following products for 7 days:

Results after 7 days' direct exposure							
	Olive oil	Alcohol	Water	Coffee	Bleach	Hair dye	Lemon Juice
SmartCOVER* systems	No defect	No defect	No defect	No defect	No defect	No defect	No defect

*\*NOTE: Test performed on the three SmartCOVER systems (CLASSIC, ECO and AQUA+) with the same result.*

**UNE 127007: Impact resistance**

This test determines impact resistance by continuously dropping a 1-kg steel ball on the same point, increasing the height from which it is dropped by 5 cm each time. The drop height for this standardised test is 1 m.

	Altura caída de la esfera de acero (1 kg)								
	60 cm	65 cm	70 cm	75 cm	80 cm	85 cm	90 cm	95 cm	100 cm
SmartCOVER* systems	No defect	No defect	No defect	No defect	No defect	No defect	No defect	No defect	No defect

*\*NOTE: Test performed on the three SmartCOVER systems (CLASSIC, ECO and AQUA+) with the same result.*

**UNE EN 1015-12: : Determination of the adhesion resistance of hardened mortar applied on supports**

Adhesion resistance results *	
SmartCOVER* system	1,34 N/mm <sup>2</sup>
SmartCOVER* system	1,39 N/mm <sup>2</sup>
SmartCOVER* system	1,31 N/mm <sup>2</sup>

Results obtained after an adhesive-type break, i.e., produced in the area where the mortar and support join. The test result is the mean of the values obtained in 5 different repetitions on the same sample

**UNE 67101: Determination of scratch hardness of the surfac**

The samples are subjected to ten 24-hour cycles (100 °C - 12 hours and -15 °C - 12 hours).

Scratch resistance/ Mohs scale		
SmartCOVER system (gloss finish)*	7	Quarz

*\*NOTE: Test performed on the three SmartCOVER systems (CLASSIC, ECO and AQUA+) with the same result.*

**UNE 127004: Freezing test**

Freezing test	
SmartCOVER* Sytems	No weight loss or apparent defects observed

The samples are subjected to ten 24-hour cycles (100 °C - 12 hours and -15 °C - 12 hours).

*\*NOTE: Test performed on the three SmartCOVER systems (CLASSIC, ECO and AQUA+) with the same result.*





# SmartCOVER $\mu$

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Made in  
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