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VITROGRES Product analysis

ENSAYO	NORMAS	RESULTADOS
ABSORCIÓN AL AGUA	UNI EN ISO 10545 p.3	NULA
RESISTENCIA AL HIELO	UNI EN ISO 10545 p.12	NO HELADIZAS
RESISTENCIA AL CHOQUE TÉRMICO	UNI EN ISO 10545 p.9	SIN VARIACIÓN
RESISTENCIA A LA FLEXIÓN	UNI EN ISO 10545 p.4	66.8 N/mm.
DESGASTE A LA ABRASIÓN	UNI EN ISO 10545 p.7	V
RESISTENCIA A LOS ACIDOS	UNI EN ISO 10545 p.13	SIN VARIACIÓN
RESISTENCIA A LOS ALCALIS	UNI EN ISO 10545 p.13	SIN VARIACIÓN
RESISTENCIA A LAS MANCHAS	UNI EN ISO 10545 p.7	5
RESISTENCIA EN AUTOCLAVE	UNI EN ISO 10545 p.11	SIN VARIACIÓN

Water absorption. UNE EN ISO 10545-3
The tiles are dried until achieving constant weight, submerged in boiling water, left there for 2 hours, and subsequently cooled in water for 4 hours. A measurement is taken after the test in order to establish whether or not there has been a change in weight due to water absorption.

Scale used	E < 3%	Low water absorption.
	3% < E < 10%	Average water absorption.
	E >10%	High water absorption.

Classification obtained by VITROGRES mosaics: E = 0.1%

Scratch resistance. UNE EN ISO 10545-7
This method is based on the rotation of an abrasive weight (steel balls, aluminium oxide and water) on the mosaic surface.

Non-slip material PEI 5
Normal material PEI 5

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Stain resistance. UNE EN ISO 10545-14

Different staining products are applied to the mosaics, following which cleaning procedures ranging from extremely simple to extremely complicated are applied. The result of the test establishes 5 categories of tile according to the ease with which a specific staining agent is removed.

Scale used: 1 to 5 from worst to best

Classification obtained by VITROGRES mosaics: category 5

Scratch hardness. UNE 67101

Test carried out according to the Mohs Scale. Involves hand-rubbing certain materials of well-known hardness on the mosaic surface.

Scale used: Mohs hardness scale 0 to 10, from lesser to greater hardness.

Classification obtained by VITROGRES mosaics: 5

Resistance to freezing. UNE EN ISO 10545-12

The mosaics are subject to 100 freezing-defrosting cycles as follows. The temperature of the mosaics is lowered to -5º for 15 minutes. They are subsequently submerged until reaching a temperature of +15º and kept there for 15 mins.

Classification obtained by VITROGRES mosaics: Resistant

Accelerated aging

The mosaics are subject to 25 heat-cold cycles according to the following procedure. 4 hours submerged at ambient temperature. 4 hours submerged in water at a temperature of 65ºC and 16 hours in a freezer at -15º.

The result of the test was that the VITROGRES mosaics tested suffered no alteration.

Chemical resistance. UNE EN ISO 10545-13

Different solutions are applied to the mosaics as indicated below.

Scale used. 3 categories: A, B, C, with A being the best and C the worst.

Classification obtained by VITROGRES mosaics:

Chemical Resistance	Test solutions	Classific.
Domestic cleaning products	Ammonia chloride	A
Swimming-pool salts	Sodium hypochlorite	A
Acids and bases Weak concentrations	Chlorhydric Acid (%3) Citric Acid (100 gs./l) Potassium hydroxide (30 gs./l)	A

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Acids and bases Strong concentration	Chlorhydric Acid (%18) Potassium hydroxide (100 gs./l)	A

Non-slip. DIN 51097
Test carried out with bare feet.

The scale used is indicated on page X. Classification:

Non-slip materiale	**Clase C**
Normal material	**Clase B**

Non-slip. DIN 10545-17. Tortus method
The scale used is indicated on page 90. Clasification:

Non-slip material	**fs: 0.81**	**fh: 0.76**
Normal material	**fs: 0.57**	**fh: 0.22**

Non-slip. DIN 51130
Test carried out with boots on.
The scale used is indicated on page 90. Clasification:

Non-slip material	**R 11**
Normal material	**R 10**

Non-slip. UNE-ENV 12600:2003
Friction pendulum test. Method used in the Technical Building Code.

The scale used is indicated on page 90. Clasification:

Non-slip material	**Category 3**

It meets the minimum required in the Technical Building Code.