09315 PORCELAIN TILE

Ceramics of Italy

NovaBell® Ceramiche Gruppo Bellei

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EXTRA

The international reference standards: ISO – EN:
The values of the main technical characteristics measured on our products, compared with international standards, are clearly shown and reproduced on our contractual documents (catalogs, price lists, etc.).
The values given in this document are common to groups of articles or series of our tiles and therefore are to be used as a guide for a first orientation in choosing the product. If required, the specific values for a given product of a determined supply can be provided depending on its intended use, when formally brought to our attention by notice in writing.

Characteristics and Test methods	Requirements EN 14411(1) - G / ISO 13006(2) - G		Our general values
Determination of water absorption - (ISO 10545-3)	Average value E_b ≤ 0,5 % / Individual maximum 0,6%		≤ 0,06 % Average value and individual maximum
Classification	Definition § 3.2 and § 3.7		BI_a – Porcelain tiles
			Physical properties
Modulus of rupture - (ISO 10545-4)	Average ≥ 35 N/mm²		≥ 35 N/mm²
Breaking strength - (ISO 10545-4)	Average ≥ 1300 N for thickness ≥ 7,5 mm Average ≥ 700 N for thickness < 7,5 mm		Complies
Resistance to deep abrasion - (ISO 10545-6)	Max volume abraded ≤175 mm³		<175 mm³
Resistance to surface abrasion - (ISO 10545-7)	Abrasion class and cycles passed		Class 0 - 5
Reccomended use	Novabell criterion		Class 4 (see Annex N - ISO 13006 / EN 14411)
Coefficient of linear thermal expansion - (ISO 10545-8)	Declared value(1) / Test method available(2)		< 7,1 x 10^{-6} °C^{-1}
Thermal shock resistance - (ISO 10545-9)	Pass according to EN ISO 10545-1(1)/ Test method available(2)		Complies
Crazing resistance - (ISO 10545-11)	Pass according to EN ISO 10545-1(1)/ Required(2)		Complies
Frost resistance - (ISO 10545-12)	Pass according to EN ISO 10545-1(1)/ Required(2)		Complies
Moisture expansion - (ISO 10545-10)	Declared value(1) / Test method available(2)		≤ 0,2 mm/m
Small colour differences - (ISO 10545-16)	ΔE_{cmc} < 0,75(1)		If agreed
Impact resistance - (ISO 10545-5)	Declared value(1)/Test method available(2)		COR > 0,75
Reaction to fire	Class A1 or $A1_{FL}$ (1)		A1 / $A1_{FL}$ (Classified Without Testing (CWT) – 96/603 EC)
Mohs hardness scale - (ex EN 101 / BS 6431-13)	--		≥ 5
			Chemical properties
Chemical resistance - (GL) (ISO 10545-13): • Resistance to low and high concentrations of acids and alkalis • Resistance to household chemicals and swimming pool salts	Declared value(1) / Manufacturer is to state classification(2) Minimum class B		Resistant (see "Maintenance and care" section) A
Resistance to staining - (ISO 10545-14)	Minimum class 3		5 (see "Maintenance and care" section)
Release of dangerous substances - (ISO 10545-15)	Declared value(1) / Test method available(2)		Pb < 0,1 / Cd < 0,01 mg/dm²
			Dimensions and surface quality
Dimensions - (ISO 10545-2)	See ANNEX G		Complies
Surface quality - (ISO 10545-2 § 7)	A minimum of 95% of the tiles shall be free from visible defects that would impair the appearance of a major area of tiles		Complies
			Slipperiness
Determination of anti-slip properties – Workrooms and fields of activities with raised slip danger, walking method-Ramp test (DIN 51130) – Germany	BGR / ASR	From R9 to R13	R9
Dynamic Coefficient Friction wet and dry condition (BCR – ex BCRA) Italy	DM n. 236 / 1989	μ > 0,40	μ > 0,40

(1) Requirements according to EN 14411 (2) Requirements according to ISO 13006

PRODUCT INFORMATION - IMPORTANT NOTES FOR THE CONSUMER - CLEANING AND CARE - PROPERTY RIGHTS: www.novabell.it

Our porcelain stoneware tiles are made from raw materials of great technical potential. This potential is enhanced by means of a production process where the body and surface of the material are treated in exactly the same way, where the tile's shape and appearance are rendered permanent by firing at temperatures which may even exceed 1200°C. This ensures that the surface and body of the tile become one, adding style and beauty to its intrinsic strength. Consequently, tiles' natural surfaces are stable against and unaffected by the chemicals and staining substances specified by the toughest international standards (ISO, EN, ASTM/ANSI), as documented by our product technical data sheets, including the statements of applicability which precede them. Maintenance performed at frequencies and by methods which effectively remove dirt will not only ensure hygiene but also conserve the material's beauty and, above all, its functional and safety characteristics: remember that the antislip properties declared refer to clean, new surfaces, as required by the standards. Inadequately removed dirt can, in itself, cause slipping unrelated to the properties of our coverings. Similarly, failure to remove or prevent abrasive dirt (e.g. by means of devices for cleaning the soles of shoes before coming indoors) may modify the structure of surfaces, reducing antislip properties below the values originally declared. Reference should be made to the ISO 13006/EN 14411 Annex N and ANSI A 137.1 § 6.2.2.1 standards.

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EXTRA

Annex N
(informative)

Classification of glazed ceramic tiles for floorings according to their resistance to surface abrasion

Where required, the following approximate classification may be used for glazed ceramic tiles intended for floorings with regard to their resistance to surface abrasion.

This classification should not be taken as providing accurate product specifications for specific requirements but rather used as guidance only (see EN ISO 10545-7).

Class 0	Glazed tiles in this class are not recommended for use on floors.
Class 1	Floor coverings in areas that are walked on essentially with soft soled footwear or bare feet without scratching dirt (e.g. residential bathrooms and bedrooms without direct access from the outside).
Class 2	Floor coverings in areas that are walked on by soft soled or normal footwear with, at the most, occasional small amounts of scratching dirt (e.g. rooms in the living areas of homes but with the exception of kitchens, entrances, and other rooms which may have a lot of traffic). This does not apply to abnormal footwear (i.e. hobnailed boots).
Class 3	Floor coverings in areas that, with normal footwear, are walked on more often with small amounts of scratching dirt (e.g. residential kitchens, halls, corridors, balconies, loggias and terraces). This does not apply to abnormal footwear (i.e. hobnailed boots).
Class 4	Floor coverings that are walked on by regular traffic with some scratching dirt so that the conditions are more severe than Class 3 (e.g. entrances, commercial kitchens, hotel, exhibition and sale rooms).
Class 5	Floor coverings that are subject to severe pedestrian traffic over sustained periods with some scratching dirt, so that the conditions are the most severe for which glazed floor tiles may be suitable (e.g. public areas such as shopping centres, airport concourses, hotel foyers, public walkways and industrial applications).

This classification is valid for the given applications under normal conditions. Consideration should be given to the footwear, type of traffic and cleaning methods expected, and the floors should be adequately protected against scratching dirt at the entrances to buildings by interposing footwear cleaning devices. In extreme cases of very heavy pedestrian traffic and quantities of scratching dirt, unglazed floor tiles from Group I can be considered.

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North America reference standards: ANSI - ASTM

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Characteristics and Test methods	Requirements ANSI A 137.1	Our general values
Determination of water absorption - (ASTM C 373)	Average value $E_b \leq 0,5$ %	Average value $\leq$ 0,06%
Classification	Definition § 3.0	Porcelain tiles
		Physical properties
Breaking strenghth - (ASTM C 648)	Average ≥ 250 lbf (1.11 kN) Individual ≥ 225 lbf (1.00 kN)	Complies
Visible abrasion - (ASTM C 1027)	As reported	Class 0 - 5
Raccomanded use	Novabell criterion (see Annex N - ISO 13006 / EN 14411)	Class 4
Thermal shock resistance - (ASTM C 428)	Pass	Complies
Crazing resistance - (ASTM C 424)	Pass	Complies
Resistance to freeze/thaw cycling - (ASTM C 1026)	As reported	Resistant
Bond strength - (ASTM C 482)	≥ 50 psi (0.34 MPa)	> 1 MPa
Color Uniformity - (ASTM C 609 and ANSI A 137.1 Section 9.3) (2)	V0 – 3 Judds	See the specific section
Mohs hardness scale - (ex EN 101 / BS 6431-13)	--	≥ 5
		Chemical properties
Chemical resistance - (ASTM C 650)	As reported	Resistant
Stain resistance - (ASTM C 1378)	As reported	Resistant
		Dimensions - Calibrated tiles
Dimensions - (ASTM C 499) - (ASTM C 485) - (ASTM C 502)	See ANSI A 137.1 - Tab.10	Complies
		Dimensions - Rectified tiles
Dimensions - (ASTM C 499) - (ASTM C 485) - (ASTM C 502)	See ANSI A 137.1 - Tab.10	Complies
		Slipperiness
DCOF Resistance (ANSI A 137.1 Section 9.6)	≥ 0.42 (1)	DCOF ≥ 0.42

(1) For level interior spaces expected to be walked upon when wet (2) For V0 tiles only

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