



Sizes	120x240 cm	75x150 cm	120x120 cm	45x90 cm	75x75 cm	60x60 cm	30x60 cm
Sizes	47 1/4"x94 1/2"	29 1/2"x59"	47 1/4"x47 1/4"	17 3/4"x35 3/8"	29 1/2"x29 1/2"	23 5/8"x23 5/8"	11 3/4"x23 5/8"
	± 9mm	± 9.5mm	± 9mm	± 9mm	± 9.5mm	± 9mm	± 9mm

	Characteristics	Test Method	Requirements for nominal size N			MARVEL GEMS			
			Requirements for nominal size N			Polished rectified	Polished rectified ± 9.5mm 75x75 cm, 75x150 cm	Matt rectified	
			7 cm ≤ N < 15 cm	N ≥ 15 cm					
			(mm)	(%)	(mm)				
Regularity characteristics Regularity characteristics		Length and width Length and width	ISO 10545-2	± 0,9 (*)	± 0,6 (*)	± 2,0 (*)	±0.3% ±1.0mm	±0.3% ±1.0mm	±0.3% ±1.0mm
		Thickness Thickness		± 0,5 (**)	± 5 (**)	± 0,5 (**)	±5.0% ±0.5mm	±5.0% ±0.5mm	±5.0% ±0.5mm
		Straightness of sides Straightness of sides		± 0,75 (***)	± 0,5 (***)	± 1,5 (***)	±0.3% ±0.8mm	±0.3% ±0.8mm	±0.3% ±0.8mm
		Rectangularity (Measurement only on short edges when L/l ≥ 3) Rectangularity (Measurement only on short edges when L/l ≥ 3)		± 0,75 (****)	± 0,5 (****)	± 2,0 (****)	±0.3% ±1.5mm	±0.3% ±1.5mm	±0.3% ±1.5mm
		Surface flatness Surface flatness		c.c. ± 0,75	c.c. ± 0,5	c.c. ± 2,0	±0.3% ±1.5mm	±0.3% ±1.5mm	±0.4% ±1.8mm
				e.c. ± 0,75	e.c. ± 0,5	e.c. ± 2,0			
Structural features Structural features		Water absorption level (in% by mass) Water absorption level (in% by mass)	ISO 10545-3	$E_B \leq 0,5\%$ Individual Maximum 0,6% - Individual Maximum 0,6%			≤0.1%	≤0.1%	≤0.1%
			ASTM C373-18	Requirement ANSI A137.1-2017 Water Absorption Max < 0,5%			≤0.5%	≤0.5%	≤0.5%
Bulk mechanical features Bulk mechanical features		Breaking strength Breaking strength	ISO 10545-4	S ≥ 700N (per spessore < 7,5mm - for thickness < 7,5mm) S ≥ 1300N (per spessore ≥ 7,5mm - for thickness ≥ 7,5mm)			S ≥ 1500 N	S ≥ 1500 N	S ≥ 1500 N
		Modulus of Rupture Modulus of Rupture		R ≥ 35 N/mm ²			R ≥ 40 N/mm ²	R ≥ 40 N/mm ²	R ≥ 40 N/mm ²
		Bending Strength and Breaking Load Bending Strength and Breaking Load	EN 1339 Annex F	-			-	-	-
Surface mechanical features Surface mechanical features		Mohs hardness Mohs hardness	EN 101	-			MOHS 5	MOHS 5	MOHS 6
		Resistance to deep abrasion of unglazed tiles (removed volume) Resistance to deep abrasion of unglazed tiles (removed volume)	ISO 10545-6	≤ 175 mm ³			≤150mm ³	≤150mm ³	≤150mm ³
Thermo-igrometric features Thermo-igrometric features		Coefficient of linear thermal expansion Coefficient of linear thermal expansion	ISO 10545-8	Declared value Declared value			≤7 1/mk	≤7 1/mk	≤7 1/mk
		Thermal shock resistance Thermal shock resistance	ISO 10545-9	Pass according to EN ISO 10545-1 Pass according to EN ISO 10545-1			Resiste	Resiste	Resiste
		Moisture expansion (in mm/m) Moisture expansion (in mm/m)	ISO 10545-10	Declared value Declared value			≤0.01% (0.1mm/m)	≤0.01% (0.1mm/m)	≤0.01% (0.1mm/m)
		Frost resistance Frost resistance	ISO 10545-12	Pass according to EN ISO 10545-1 Pass according to EN ISO 10545-1			Resiste	Resiste	Resiste
Physical properties Physical properties		Bond strength/adhesion for improved cementitious adhesives Bond strength/adhesion for improved cementitious adhesives	EN 1348	Declared value Declared value			≥1.0 N/mm ² (Class C2 - EN 12004)	≥1.0 N/mm ² (Class C2 - EN 12004)	≥1.0 N/mm ² (Class C2 - EN 12004)
		Reaction to fire Reaction to fire	-	Class A1 or A1 _{fl} Class A1 or A1 _{fl}			A1 - A1 _{fl}	A1 - A1 _{fl}	A1 - A1 _{fl}
Chemical features Chemical features		Resistance to household chemicals and swimming pool salts Resistance to household chemicals and swimming pool salts	ISO 10545-13	Minimum Class B Minimum Class B			A	A	A
		Resistance to low concentrations of acids and alkalis Resistance to low concentrations of acids and alkalis		Declared Class Declared Class			LA	LA	LA
		Resistance to high concentrations of acids and alkalis Resistance to high concentrations of acids and alkalis		Declared Class Declared Class			0	HA	HA
Safety characteristics Safety characteristics		Shod Ramp Test Shod Ramp Test	DIN 51130	Declared Class Declared Class			NC	NC	R10
		Barefoot Ramp Test Barefoot Ramp Test	DIN 51097	Declared value Declared value			0	0	A
		Pendulum Friction Test Pendulum Friction Test	BS 7976	PTV 36 classifies the surface as "low slip risk"			≥36Dry ≤ 24Wet	≥36Dry ≥36Wet	≥36Dry ≥36Wet
			AS 4586	Declared Classification of the new pedestrian surface materials according to the Pendulum Test			-	Class P3	Class P3
			UNE-ENV 12633	Declared value Declared value			-	Class 0	C2 on demand
		Coefficient of friction (COF) Coefficient of friction (COF)	B.C.R.A. Rep. CEC/81	D. M. 236/89 del 14/06/89 μ >0,40 per elemento scivolante cuoio su pavimentazione asciutta μ >0,40 per elemento scivolante gomma dura su pavimentazione bagnata			>0.40Asciutto <0.40Bagnato	>0.40Asciutto <0.40Bagnato	>0.40Asciutto >0.40Bagnato
Dynamic coefficient of friction (DCOF) Dynamic coefficient of friction (DCOF)	ANSI A.137.1	ANSI A.137.1-2017 Requires a minimum value of 0.42 for level interior space expected to be walked upon when wet. (3)			<0.42Wet	<0.42Wet	>0.42Wet		

* Deviazione ammissibile, in % oppure mm, della dimensione media di ogni piastrella (2 oppure 4 lati) dalla dimensione di fabbricazione (W).
The permissible deviation, in % or mm, of the average size for each tile (2 or 4 sides) from work size (W).

** Deviazione ammissibile, in % oppure mm, dello spessore medio di ogni piastrella dallo spessore riportato nella dimensione di fabbricazione (W).
The permissible deviation, in % or mm, of the average thickness for each tile from the work size thickness (W).

*** Deviazione massima ammissibile di rettilineità, in % oppure mm, in rapporto alle dimensioni di fabbricazione (W) corrispondenti.
The maximum permissible deviation from straightness, in % or mm, related to the corresponding work sizes (W).

**** Deviazione massima ammissibile di ortogonalità, in % oppure mm, in rapporto alle dimensioni di fabbricazione (W) corrispondenti.
The maximum permissible deviation from rectangularity, in % or mm, related to the corresponding work sizes (W).

c.c. Deviazione massima ammissibile della curvatura del centro, in % oppure mm, in rapporto alla diagonale calcolata secondo le dimensioni di fabbricazione (W).
The maximum permissible deviation from centre curvatures, in % or mm, related to diagonal calculated from the work sizes (W).

e.c. Deviazione massima ammissibile della curvatura dello spigolo, in % oppure mm, in rapporto alle dimensioni di fabbricazione (W) corrispondenti.
The maximum permissible deviation from edge curvatures, in % or mm, related to the corresponding work sizes (W).

w. Deviazione massima ammissibile dello sverglamento, in % oppure mm, in rapporto alla diagonale calcolata secondo le dimensioni di fabbricazione (W).
The maximum permissible deviation from warpage, in % or mm, related to diagonal calculated from the work sizes (W).

Determinazione della resistenza allo scivolamento delle superfici pedonabili; non si applica alle pavimentazioni sportive ed alle pavimentazioni stradali veicolari.
Determination of slip resistance of pedestrian surfaces; it does not cover sports surfaces and road surfaces for vehicles (skid resistance).

(1) Le prestazioni anti-slip vengono garantite al momento della consegna del prodotto.
Anti-slip performance is guaranteed at the time of delivery of the product.

However, tiles with a DCOF of 0.42 or greater are not necessarily suitable for all projects.

(2) The specifier shall determine tiles appropriate for specific project conditions, considering by way of example, but not in limitation, type of use, traffic, expected contaminants, expected maintenance, expected wear, and manufacturers' guidelines and recommendations."

(3) For further details, please refer to outdoor design general catalogue.

(4) Only for products with 20 mm thickness.