topCer® Indústria de Cerâmica, S.A.

TECHNICAL DATA

Unglazed porcelain tiles — ISO 13006 and EN 14411 - Annex G - Group Bla

SIZES:	M(=N)	10x10	10x30	7.5x15	15x15	30x30	DESIGNING COMPONENTS a)
	W	96x96x8	96x296x8	71x146x8	146x146x8	296x296x8.5	

a) Including 6STP (W29x146x8), 5STP (W21x137x8), 6D (W64x64x8), 3D (W29x29x8), LZ (W96x44x52x8), TR (W93x93x8, W64x64x8, W45x45x8, W25x25x8 y W20x20x8)

PHYSICAL PROPERTIES	TEST STANDARD	REQUIREMENTS			TOPCER VALUE
DIMENSION AND SURFACE QUALITY:		N< 7 cm	7 cm≤N<15 cm	N≥15 cm	
Length and width	ISO 10545-2	± 0,5 mm	± 0,9 mm	± 0,6% / ± 2,0 mm	Conforms
Thickness	ISO 10545-2	± 0,5 mm	± 0,5 mm	± 5,0% / ± 0,5 mm	Conforms
Straightness of sides	ISO 10545-2	No testing	± 0,8 mm	± 0,5% / ± 1,5 mm	Conforms
Rectangularity	ISO 10545-2	No testing	± 0,8 mm	± 0,5% / ± 2,0 mm	Conforms
Surface flatness, (curvature and warpage)	ISO 10545-2	No testing	± 0,8 mm	± 0,5% / ± 2,0 mm	Conforms
Surface quality	ISO 10545-2		≥ 95%		Conforms
PRODUCT QUALITY AND DURABILITY:					
Water absorption	ISO 10545-3		≤ 0,5%		Conforms
Breaking strength	ISO 10545-4		≥ 1300 N		≥ 1800 N
Modulus of rupture	ISO 10545-4		≥ 35 N/mm²		≥ 50 N/mm²
Impact resistance	ISO 10545-5		Declared Value		No visible defects
Resistance to deep abrasion (unglazed tiles)	ISO 10545-6		≤ 175 mm³		123 mm³
Coefficient of linear thermal expansion	ISO 10545-8		Declared Value		5,6 x 10^{-6} °C^{-1}
Thermal shock resistance	ISO 10545-9		No visible defects		Conforms
Moisture expansion	ISO 10545-10		Declared Value		< 0,1 mm/m
Frost resistance	ISO 10545-12		No visible defects		Conforms
Resistance to chemicals	ISO 10545-13		No visible defects		Conforms
Resistance to staining	ISO 10545-14		No permanent staining		Conforms

SLIP RESISTANCE: (For the designing components, the slip resistance is equal or better than size 10x10 smooth)

Areas with footwear	**Dynamic Coefficient of Friction (DCOF)**			
		VALUES:		
	ASTM - ANSI A 137.1-2012 (INTERTEK - CA)	0.62		10x10 / 4"x4 Plain Finish (smooth)
		0.65		10x10 / 4"x4 Riven (RT) finish
	AS 4586:2013 Apendix B (ATTAR - AU)	0.65		10x10 / 4"x4 Plain Finish (smooth)
	Wet Pendulum Slip Resistance			
	AS 4586:2013 Apendix A (ATTAR - AU)	47		10x10 / 4"x4 Plain Finish (smooth)
		VALUES:		
	Pendulum (Slider 96)	DRY	WET	SIZES / SURFACE TEXTURE
	CEN/TS 16165 : 2016 (Annex C)	62 - 71	42 - 53	10x10; 7,5x15; 15x15; 10x30; 30x30 Plain finish (smooth)
		65	45	10x10 Octagon with 3x3 dot Plain finish (smooth)
		63	39	10x10 Hexagon Plain finish (smooth)
		81 / 85	73 / 75	10x10 Round studs (RC) finish / 15x15 Round studs (RC) finish
		83 / 85	71 / 74	10x10 Square studs (SS) finish /15x15 Square studs (SS) finish
		85 / 88	70 / 79	10x10 Diamond studs (DD) finish /15x15 Diamond studs (DD) finish
		63 / 67	53 / 55	10x10 Riven (RT) finish /15x15 Riven (RT) finish
	Pendulum (Slider 57)	PVT	Class	SIZES / SURFACE TEXTURE
	UNE 41901 : 2017 EX (SPAIN)	37 / 39	2	10x10 colour 16 / 10x10 colour 28 Plain finish (smooth)
		29 - 32	1	10x10 other colours; 10x10 Octagon; 10x10 Hexagon Plain finish (smooth)
		26 - 35	1	7,5x15; 15x15; 10x30; 30x30 Plain finish (smooth)
	PVT Class	57 / 53	3	10x10 Round studs (RC) finish / 15x15 Round studs (RC) finish
	$R_d \leq 15$ = 0	64 / 58	3	10x10 Square studs (SS) finish /15x15 Square studs (SS) finish
	$15<R_d \leq 35$ = 1	51 / 56	3	10x10 Diamond studs (DD) finish /15x15 Diamond studs (DD) finish
	$35<R_d \leq 45$ = 2	47 / 54	3	10x10 Riven (RT) finish /15x15 Riven (RT) finish
	$R_d > 45$ = 3			
	Ramp Test	VALUES:		
	DIN 51130 (HS-KOBLENZ - DE)	6° ≤ R9 ≤ 10°		30x30 Plain finish (smooth)
		10° < R10 ≤ 19°		10x10 (also Hexagon and Octagon) / 10x30 /15x15 Plain finish (smooth)
		19° < R11 ≤ 27°		10x10 /15x15 Square studs (SS) and in Round studs (RC) 30x30 Rubber (R), 30x30 Riven (RT)
		27° R12 ≤ 35°		10x10 /15x15 Riven (RT) and in Diamond studs (DD)
Displacement volume / Expulsion space	DIN 51130/BGR 181 (HS-KOBLENZ - DE)	V5		15x15 Square studs (SS) and Riven (RT)
		V6		10x10 Square studs (SS) and Riven (RT), 15x15 Round studs (RC)
		V7		15x15 Diamond studs (DD)
		V8		10x10 Round studs (RC)
Areas with bare-footed	DIN 51097 (HS-KOBLENZ - DE)	12° ≤ A < 18°		30x30 Plain finish (smooth)
	(HS-KOBLENZ - DE)	18° ≤ B < 24°		10x10 (also Hexagon and Octagon) / 10x30 /15x15 Plain finish (smooth) 30x30 Rubber (R), 30x30 Riven (RT)
	(CERAM - UK)	18° ≤ B < 24°		10x10 /15x15 Plain finish (smooth)
	(CERAM - UK)	C ≥ 24°		15x15 Round studs (RC)+Diamond studs (DD)+Riven (RT)+Square studs (SS)
	(HS-KOBLENZ - DE)	C ≥ 24°		10x10 /15x15 Round studs (RC)+Diamond studs (DD)+Riven (RT)+Square studs (SS)

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Indepentent tests available at http://www.topcer.com/independent_tests.php