

# INDUSTRIAL TILES FOR THE MOST DEMANDING ENVIRONMENTS



# Industrial Tiles



Available in these thicknesses and dimensions:



30x30 cm



30x30 cm



20x10 cm | 30x30 cm



## Plain Series 30X30 cm



Grey

D



Ivory

D

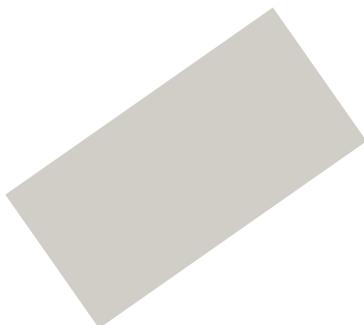


Terracotta

D

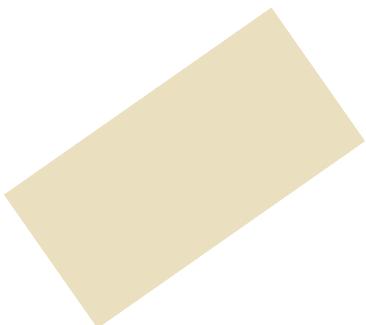


## Plain Series 20X10 cm



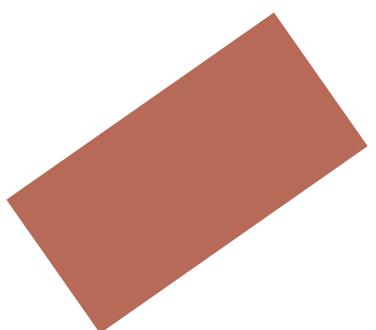
Grey

D



Ivory

D



Terracotta

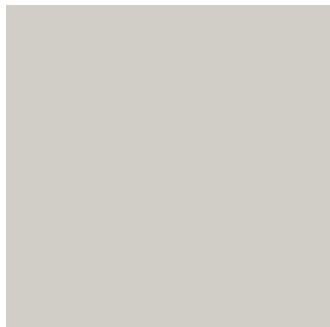
D



Ivory & Terracotta



## Plain Series 30X30 cm



**Grey**

D/K



**Ivory**

D/K



**Terracotta**

D/K



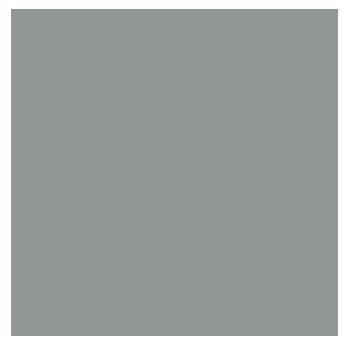
**Coated Grey Plus**

D/K



**Grey Plus**

D/K



**Silver Grey Plus**

D/K



**Silver Grey Plus Special**

D



**Maxcir Grey R11**

D/K



**Maxcir Ivory R11**

D/K



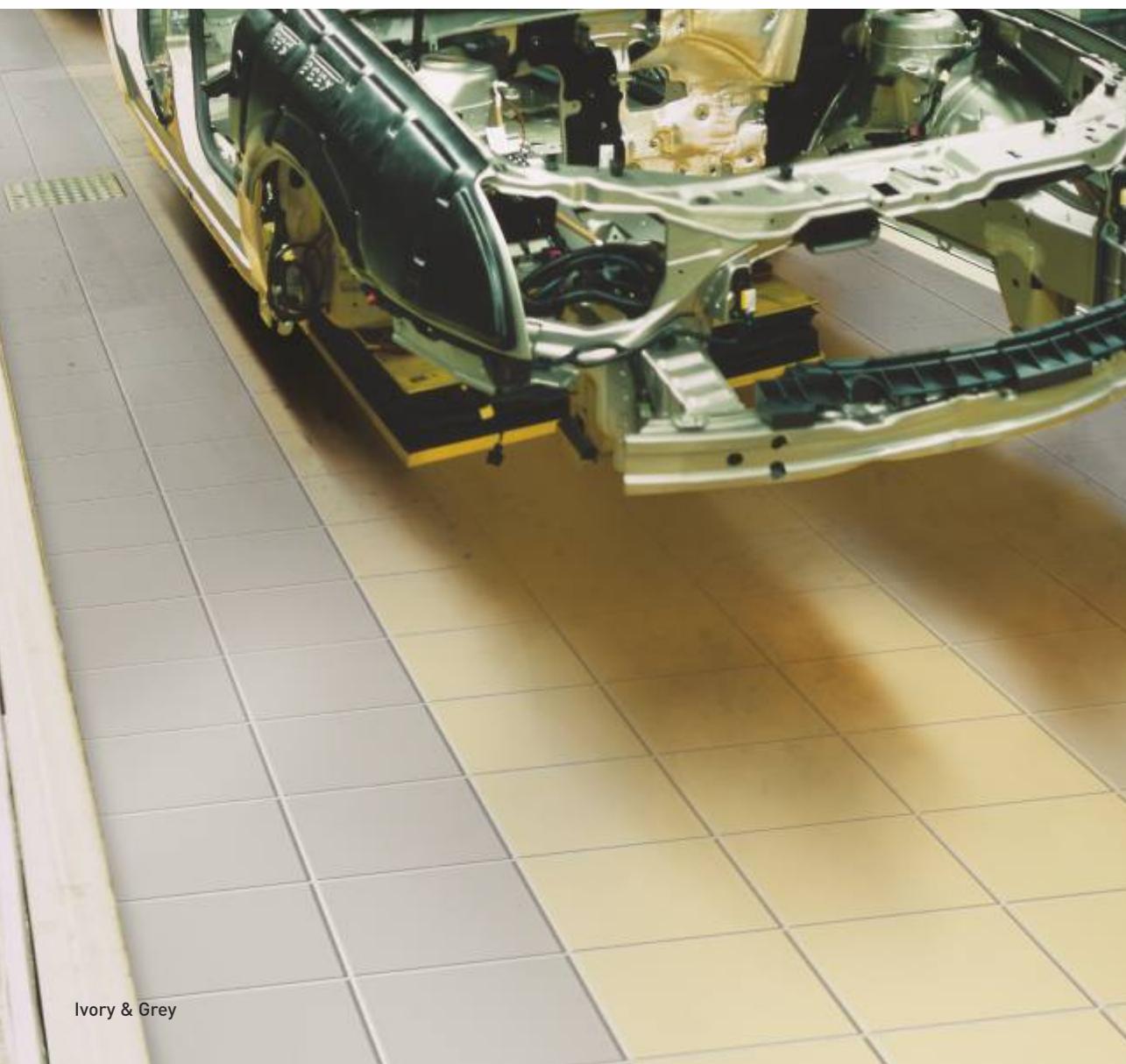
## Speciality Series 30X30 cm



Caranz



Cavelo



Ivory & Grey

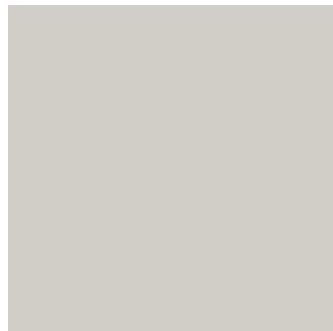


## Plain Series 30X30 cm



**Benaulim**

D



**Grey**

D/K



**Grey Plus**

D/K



**Ivory**

D/K



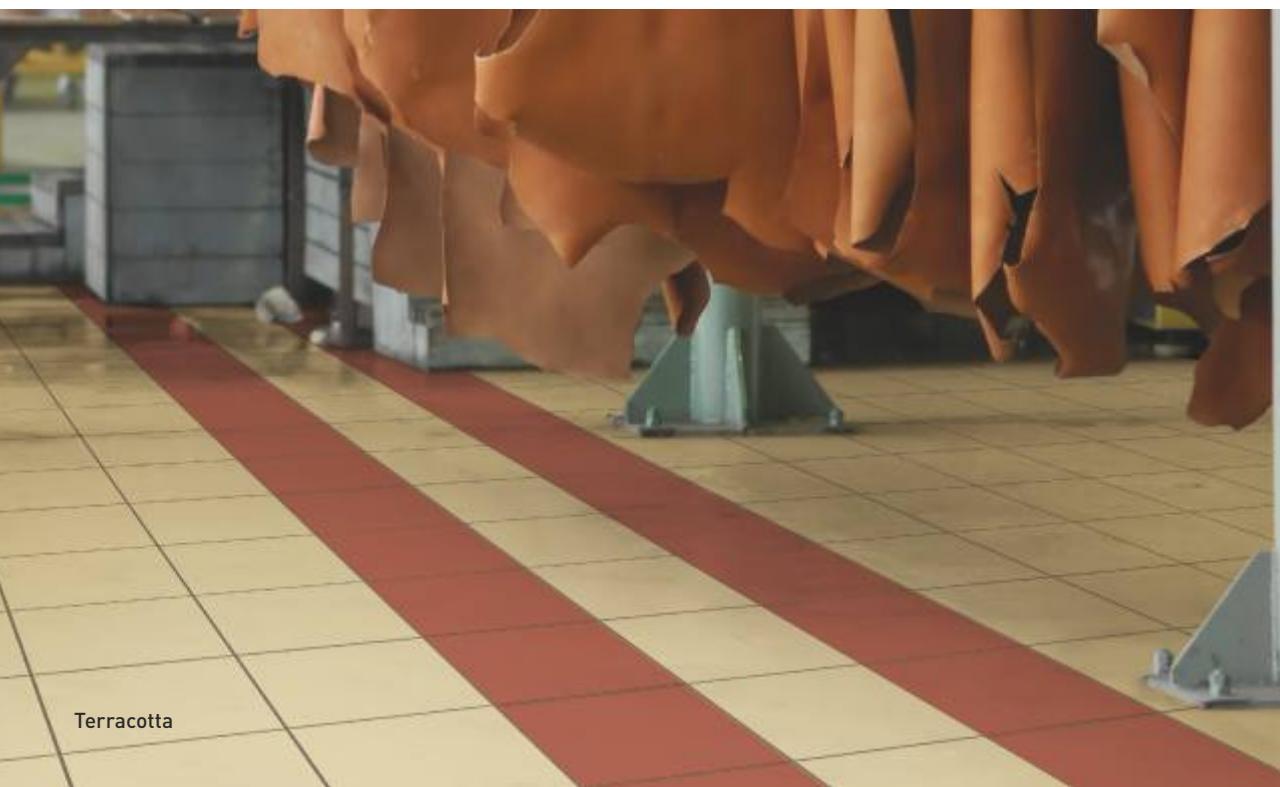
**Majorda**

D



**Terracotta**

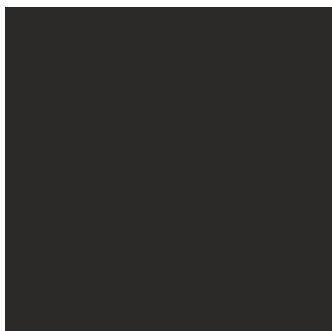
D/K



**Terracotta**

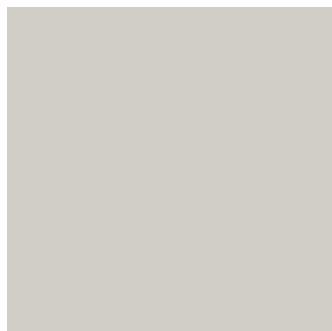


## Colour Series 30X30 cm



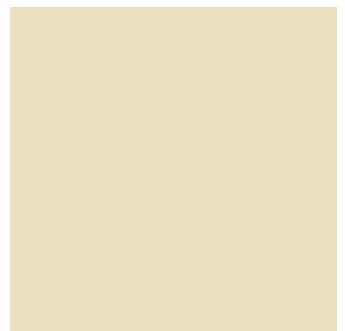
Coated Black Plus

D



Coated Grey Plus

D/K



Ivory Plus

D



Silver Grey Plus

D/K



To Blue Plus

D



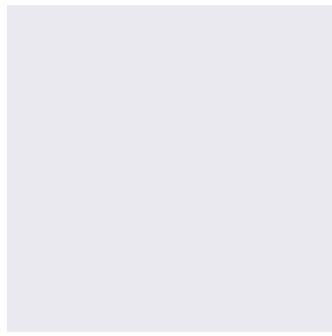
To Green Plus

D



Yellow Plus

D/K



White Plus

D/K



## Textured Series 30X30 cm



Checkered Grey

D/K



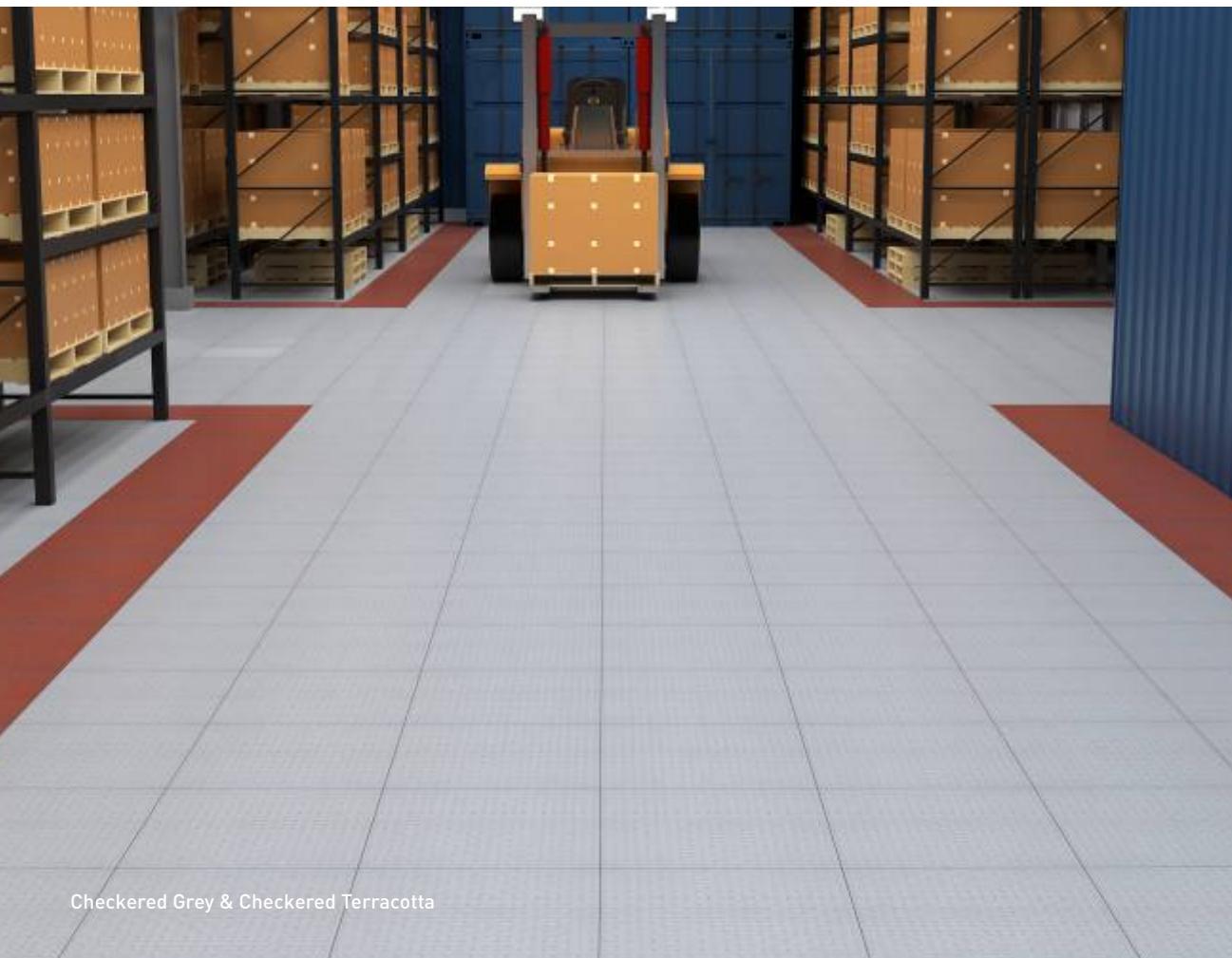
Checkered Ivory

D

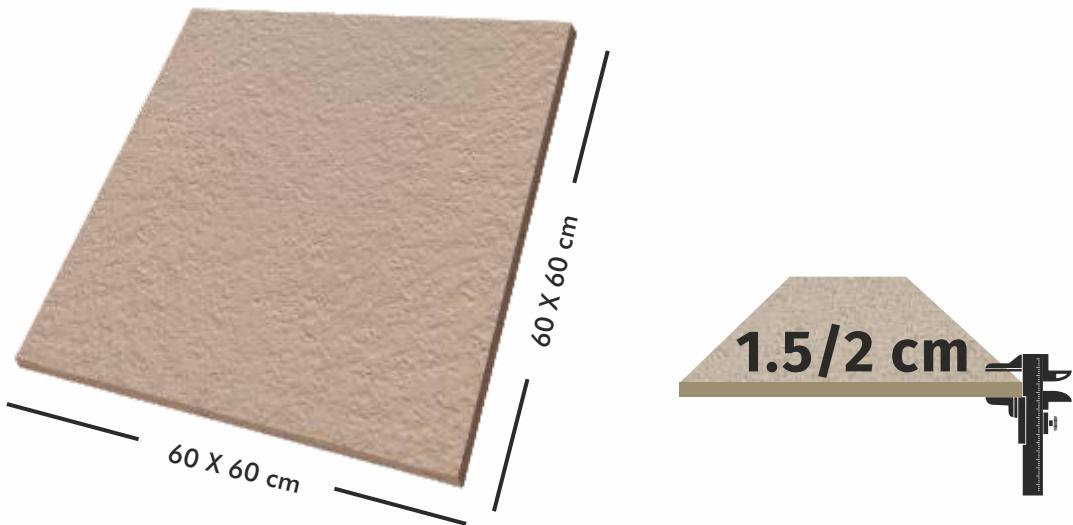


Checkered Terracotta

D



Checkered Grey & Checkered Terracotta



## MULTIFOLD BENEFITS



Easy to clean



Easy to install



Color retention



Resistant to  
thermal shock



High breakage  
resistant



Removable\*,  
Easy to inspect  
& Reusable



Frost resistant



Resistant to  
corrosion from salt



Anti skid



Environment friendly



Versatile



Resistant to stains,  
acids & chemicals

# Methods of Installation



**RAISED FLOORING WITH SUPPORTS**

The raised installation allows for the creation of a technical gap of variable height between the substrate and the foot plan. It can be replaced and inspected at any time without damaging the surface and allows wires, pipe ducts and lighting systems to be concealed.



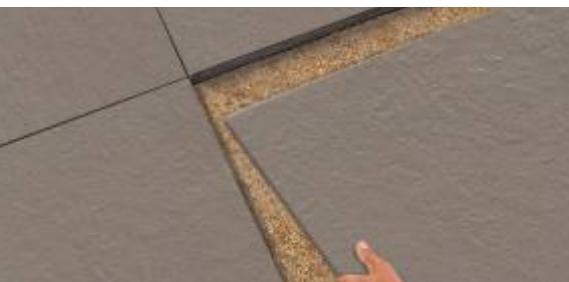
**DRY INSTALLATION GRAVEL**

The dry installation allows for the positioning of the slabs directly onto substrates in gravel to create pedestrian pathways that can be immediately walked upon. This type of application is easy & quick and does not require the use of adhesive for installation.



**TRADITIONAL ADHESIVE SYSTEM**

The traditional adhesive installation onto screed guarantees an excellent breakage load thanks to the performance of 2cm thickness. This installation method represents the perfect solution for carriageable lanes as well as lanes with vehicular movement.



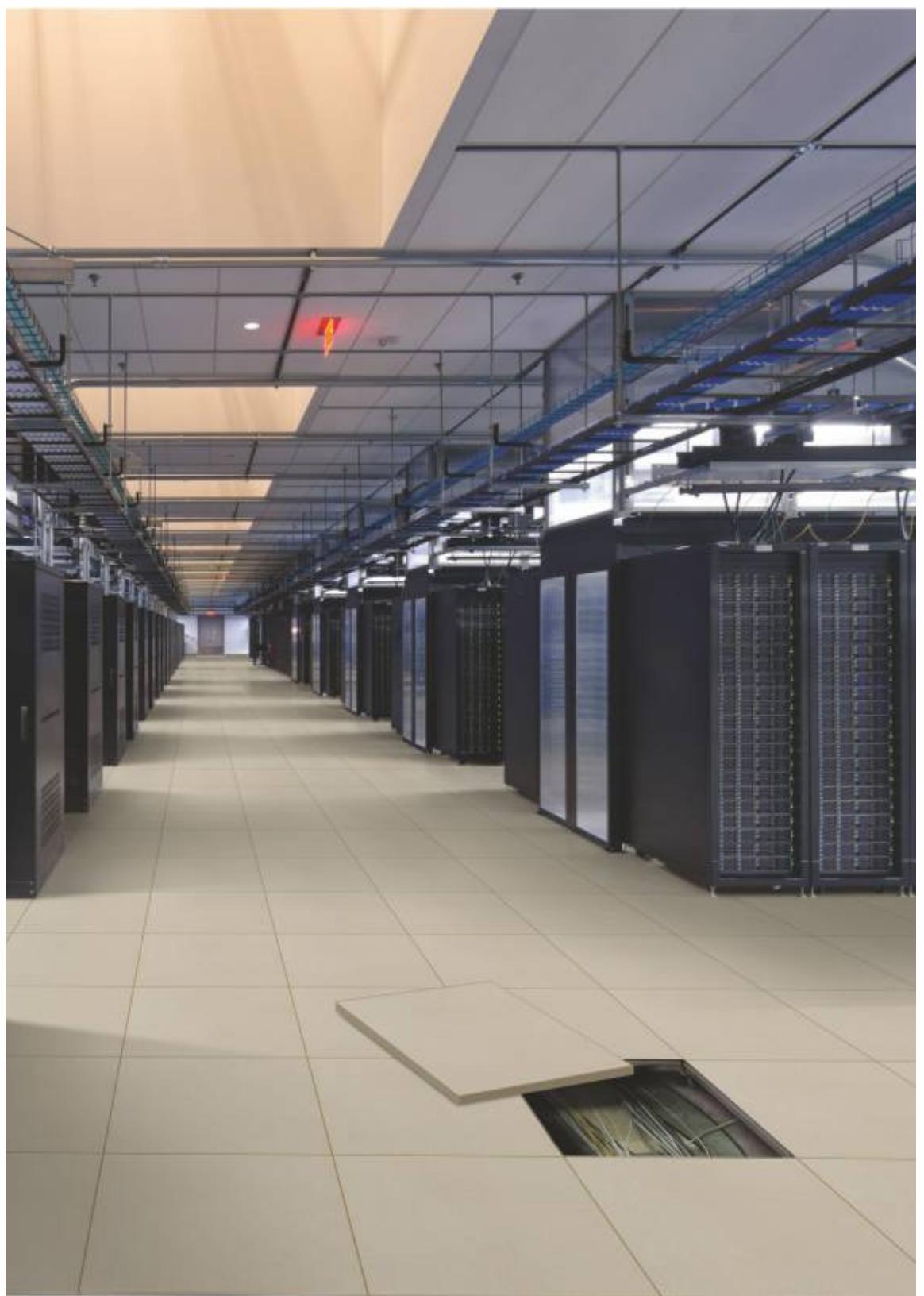
**DRY INSTALLATION SAND**

The dry installation allows for the positioning of the slabs directly onto substrates in sand to create pedestrian pathways that can be immediately walked upon. This type of application is easy & quick and does not require the use of adhesive for installation.



**DRY INSTALLATION GRASS**

The dry installation allows for the positioning of the slabs directly onto substrates in grass to create pedestrian pathways that can be immediately walked upon. This type of application is easy & quick and does not require the use of adhesive for installation.



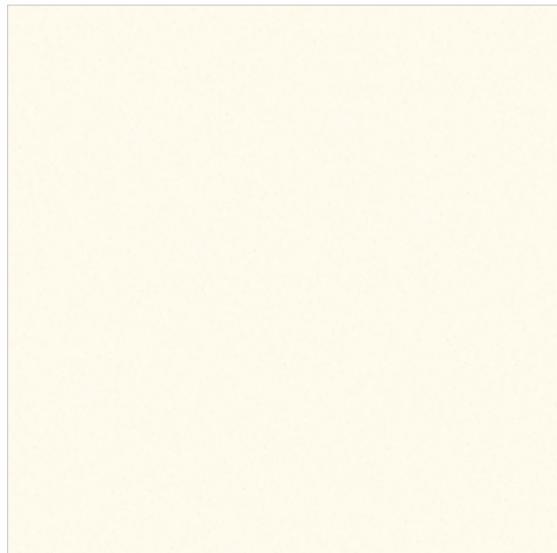


Iris Crema

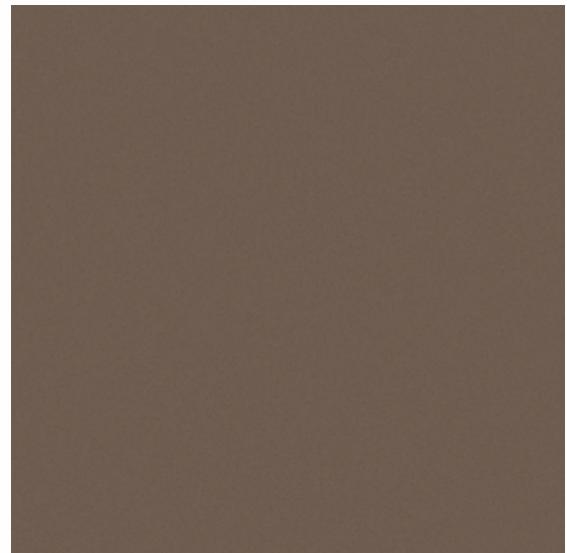


80x80cm

**METEOR**



Iris Crema (PO)



S & P Choco (PO)

[P]



Palolem



Vaga

[P]



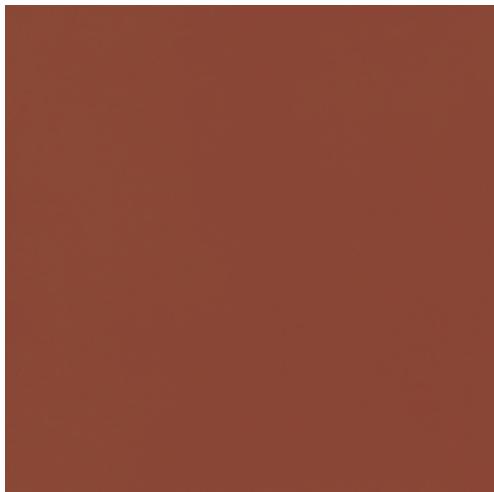
60x60cm



Kreo Gris



Kreo Ivory

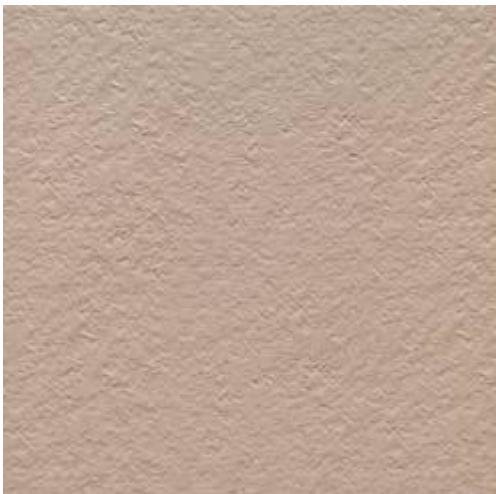


Kreo Terracotta



Kreo Beige





**Korneto Beige**

D



**Korneto Gris**

D

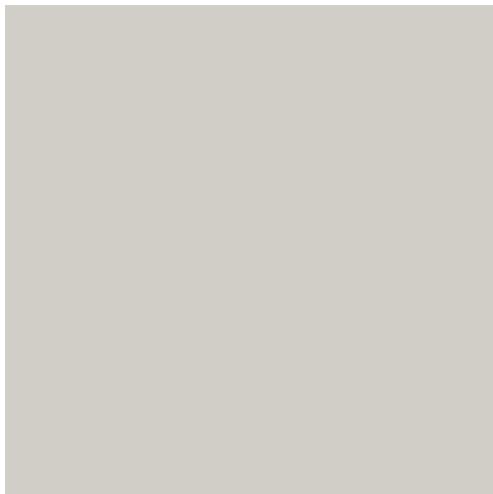


**Korneto Ivory**

D

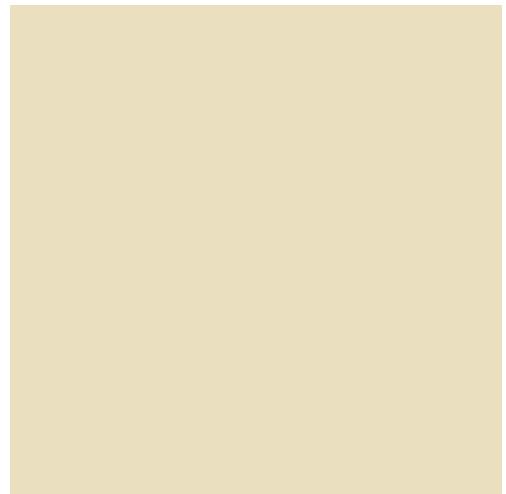


60x60cm



**Coated Grey Plus**

D



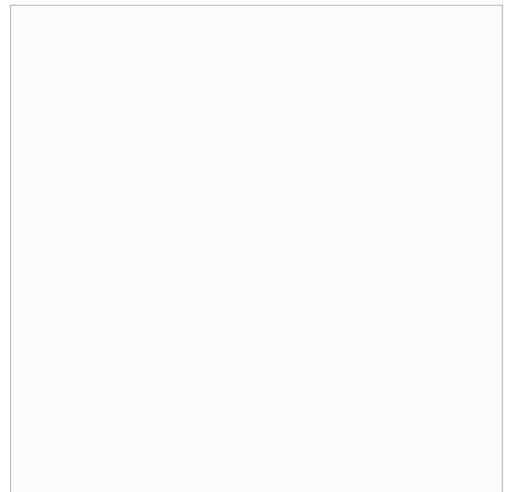
**Ivory**

P



**Plain Grey**

P



**Plain White**

P

**Plain Benaulim**

P

**Plain Donapaula**

P

**Triumph Grey**

P

**Nova Cement**

P



Slate Nero



60x60cm

METEOR



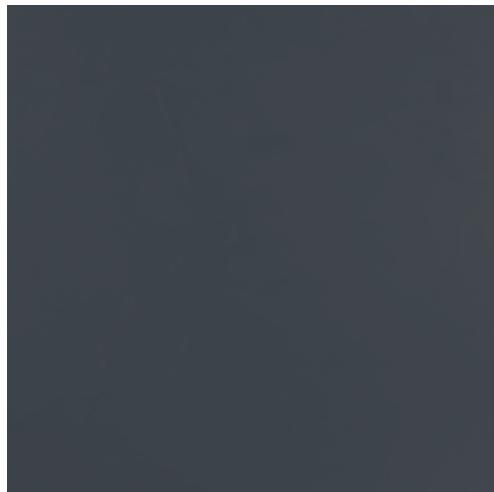
Slate Bianco

P



Slate Kota green

● P



Slate Nero

● P



Terracotta

P

# Technical Specification (Industrial Tiles)

S. No.	Test Description							Test Method
		I.S. - 4457:2007	20X10CM (UR)	IS - 15622:2017 Group B1b	30X30 CM ('R')			
	A) Dimension Quality		2.0cm		1.2cm	1.5cm	2.0cm	
1	Deviation in Length & Width	±0.75%	±0.6%	±0.1%	±0.1%	±0.1%	±0.1%	
2	Deviation in Thickness	±5%	±4%	±5%	±4%	±4%	±4%	
3	Straightness of Sides	±0.5%	±0.5%	±0.1%	±0.1%	±0.1%	±0.1%	
4	Rectangularity	±0.6%	±0.6%	±0.1%	±0.1%	±0.1%	±0.1%	
5	Surface Flatness	±0.5%	±0.4%	±0.5%	±0.3%	±0.3%	±0.3%	
6	Surface Quality	Min 95%	Min 95%	Min 95%	Min 95%	Min 95%	Min 95%	
	B) Physical Properties							
1	Water Absorption	<0.5%	<0.5%	0.08<E<3	<0.5%	<0.5%	<0.5%	IS 4457:2007 Annex C / IS 13630-2
2	a) Scratch hardness of surface (Moh's scale) - Unglazed tile	—	≥7	≥5	≥7	≥7	≥7	IS 13630 part 13
	b) Scratch hardness of surface (Moh's scale) - Glazed tile	—	≥6	≥5	≥6	≥6	≥6	
3	Flexural Strength (Average MOR)	>35N/mm <sup>2</sup>	>38 N/mm <sup>2</sup>	>30N/mm <sup>2</sup>	>38 N/mm <sup>2</sup>	>38 N/mm <sup>2</sup>	>38 N/mm <sup>2</sup>	IS 4457:2007 Annex D / IS 13630-6
4	Breaking Strength	≥1300N	>8000N	≥1100N	>3000N	>5500N	>8000N	IS 4457:2007 Annex D / IS 13630-6
5	Impact Resistance	Manufacturer to declare	≥0.55	≥0.55	≥0.55	≥0.55	≥0.55	IS 13630 -14
6	Deep Abrasion Resistance (Unglazed tile)	<175mm <sup>3</sup>	<120 mm <sup>3</sup>	<175mm <sup>3</sup>	<120 mm <sup>3</sup>	<120 mm <sup>3</sup>	<120 mm <sup>3</sup>	IS 4457:2007 Annex E / IS 13630-12
7	Resistance to Surface Abrasion of Glazed Tiles for Floor Application	—	Min PEI IV - V	Class II, Min	Min PEI IV - V	Min PEI IV - V	Min PEI IV - V	IS 13630 - 11
8	# Skid Resistance							
	a) Skid Resistance - Ramp Test	—	>R9	—	>R9	>R9	>R9	DIN 51130
	b) Coefficient of Friction	—	>0.42		>0.42	>0.42	>0.42	ISO 10545 -17 / ANSI A 326.3
9	Frost Resistance	—	No damage	Manufacturer to declare	No damage	No damage	No damage	IS 13630-10
10	Density (gm/cc)	—	>2.2	≥2	>2.2	>2.2	>2.2	IS 13630 part 2
11	Moisture Expansion	Manufacturer to declare	≤0.02mm/m	Max 0.02mm/m	≤0.02mm/m	≤0.02mm/m	≤0.02mm/m	IS 13630-part 3
12	Color Resistance to UV Light	—	No change in color	—	No change in color	No change in color	No change in color	DIN 51094
	C) Chemical Properties							
1	Resistance to Concentrated HNO <sub>3</sub> & H <sub>2</sub> SO <sub>4</sub> Acid (wt. Loss)	<1.5 %	<0.8 %	—	<0.8 %	<0.8 %	<0.8 %	IS 4457:2007 Annex G
2	Resistance to Chemicals							ISO 10545-13 / IS 13630 part 8
	a) Resistance to Low concentrations of acids & alkalies	Manufacturer to declare	ULA/GLA	Manufacturer to declare	ULA/GLA	ULA/GLA	ULA/GLA	
	b) Resistance to High concentrations of acids & alkalies	Manufacturer to declare	UHA/GHA	Manufacturer to declare	UHA/GHA	UHA/GHA	UHA/GHA	
3	c) Resistance to household chemicals and swimming pool salts	Manufacturer to declare	AA min	IS 13630 part 8				
	Stain Resistance		Class 1 min					
	D) Thermal Properties							
1	Linear Thermal Expansion	—	<7x10 <sup>-4</sup> K <sup>-1</sup>	IS 13630 part 4 / ISO 10545-8				
2	Thermal Shock Resistance	—	No damage	10 cycle, Min	No damage	No damage	No damage	IS 13630 part 5 / ISO 10545-9

# Ramp Test: Suitable for all kind of surfaces (Plain, structural, etc.)

# Slider (BOT-3000E Digital Tribometer): Suitable for plain / smooth surface and not working for structural / profiled surface

# Technical Specification (Anti-Static Tiles)

S. No.	Property	Indian Standard IS 15622:2017 Group B1a Requirement		Test Method
A) Dimensions & Surface Quality				
1	Deviation in Length & Width	± 0.1 %	± 0.1%	ISO 10545-2 / IS 13630-1
2	Deviation in Thickness	± 5 %	± 4%	
3	Straightness of Sides	± 0.1 %	± 0.1%	
4	Rectangularity	± 0.1 %	± 0.1%	
5	Surface Flatness	± 0. 5 %	± 0.2%	
6	Surface Quality	Min 95% free from visible defects	>95% free from visible defects	
B) Physical Property				
7	Water Absorption	Average <0.08, Individual 0.1%, Max	≤0.05%	ISO 10545-3 / IS 13630- 2
8	Modulus of Rupture	Average 35N/mm <sup>2</sup> , Individual 32N/mm <sup>2</sup> , Min	≥38N/mm <sup>2</sup>	ISO 10545-4 / IS 13630-6
9	Breaking Strength	700 N Min for thickness < 7.5 mm, 1300 Min for thickness ≥7.5mm	≥1800N	ISO 10545-4 / IS 13630-6
10	Moisture Expansion	0.02 mm/m, Max	≤0.02 mm/m	ISO 10545-10 / IS 13630-3
11	Scratch Hardness of Surface (Moh's scale)	5, Min	≥5	IS 13630 -13
12	Resistance to Surface Abrasion of Glazed Tiles for Floor Application	Class II, Min	PEI III-IV	ISO 10545-7 /IS 13630 -11
13	Coefficient of Linear Thermal Expansion	Max, $6 \times 10^{-6} K^{-1}$	≤ $6 \times 10^{-6} K^{-1}$	ISO 10545-8 / IS 13630-4
14	Thermal Shock Resistance	10 cycles Min	No Damage	ISO 10545-9 / IS 13630 -5
15	Crazing Resistance of Glazed Tiles	4 cycles @7.5 bar Min	No Damage	ISO 10545-11/ IS 13630-9
16	Impact Resistance	0.55, Min	≥0.55	ISO 10545-5 / IS 13630-14
	# Skid Resistance			
17	a) Skid Resistance - Ramp Test	Manufacturer to declare	>R9	DIN 51130
	b) Coefficient of Friction	Manufacturer to declare	>0.42	ISO 10545 -17 /ANSI A 326.3
18	Frost Resistance	Required if requested by purchaser	No damage	ISO 10545-12 / IS 13630-10
19	Bulk Density (g/cc)	2.2, Min	≥2.2	ASTM C373-16 / IS 13630-2
20	Color Resistance to UV Light	—	No change in color	DIN 51094
	Resistance to Chemicals			
21	1) Resistance to Low concentrations of acids & alkalies	Manufacturer to declare	GLA	ISO 10545-13 / IS 13630-8
	2) Resistance to High concentrations of acids & alkalies	Manufacturer to declare	GHA	
	3) Resistance to household chemicals and swimming pool salts	AA min	AA min	
22	Resistance to Staining - Glazed Tiles	Class 1 min	Class 1 min	ISO 10545-14 / IS 13630-8
23	Lead & Cadmium Release-for Glazed Tiles, where required	—	Nil	ISO 10545-15
	Surface Electrical Resistance (ANSI Norms)	Below 1 Mega Ohm [Conductive]	< 50 Kilo Ohm	ANSI ESD S7.1
24		Between 1Mega Ohm to 1 Giga Ohm (Dissipative)	1Mega Ohm to 1 Giga Ohm	
	Static Decay Time	<0.5 Sec (Conductive)	<0.5Sec	MIL-B-8170 Para 4.8.3 & FED-STD- 101C. Method 4046
		< 2 Sec (Dissipative)	<0.5Sec	

# Ramp Test: Suitable for all kind of surfaces (Plain, structural..etc)

# Slider (BOT -3000E Digital Tribometer): Suitable for plain / smooth surface and not working for structural / profiled surface

# Technical Specification

## (Meteor Tiles)

S. No.	Test Description	ISO 13006:2018 / EN 14411 Group B1a Requirement	IS - 15622:2017 Group B1b			Test Method
				1.5 cm	2.0 cm	
	A) Dimension Quality	Whichever is less applicable. Rectified	Rectified			
1	Deviation in Length & Width	± 0.3% or ± 1.0mm	±0.1%	±0.1%	±0.1%	ISO 10545-2 / IS 13630-1
2	Deviation in Thickness	± 5% or ± 0.5mm	±5%	±4%	±4%	
3	Straightness of Sides	± 0.3% or ± 0.8mm	±0.1%	±0.1%	±0.1%	
4	Rectangularity	± 0.3% or ± 1.5mm	±0.1%	±0.1%	±0.1%	
5	Surface Flatness	± 0.4% or ± 1.8mm	±0.5%	±0.3%	±0.3%	
6	Surface Quality	Min 95%	Min 95%	Min 95%	Min 95%	
	B) Physical Properties					
1	Water Absorption	≤ 0.5%, individual Max 0.6%	0.08% < E ≤ 3	≤0.5%	≤0.5%	ISO 10545-3 / IS 13630-2
2	Scratch Hardness of Surface (Moh's scale)	-	≥5	>6	>6	IS 13630 part 13
3	Flexural Strength (Average MOR)	≥35 N/mm², Individual 32N/mm², Min	≥30N/mm², Individual 27 min	>38N/mm²	>38N/mm²	ISO 10545-4 / IS 13630-6
4	Breaking Strength	≥1300 N	≥1100 N	>5500 N	>8000 N	
5	Impact Resistance	Report value	≥0.55	≥0.55	≥0.55	ISO 10545-5 / IS 13630-14
6	Surface Abrasion Resistance (PEI Rating) Glazed	Report cycle	Class II, Min	Min PEI IV - V	Min PEI IV - V	ISO 10545-7 / IS 13630-11
7	Deep Abrasion Resistance (Unglazed)	Report abrasion class	<175mm³	<120mm³	<120mm³	ISO 10545-6 / IS 13630-12
	# Skid Resistance					
8	a) Skid Resistance - Ramp Test	Manufacturer to declare	Manufacturer to declare	>R9	>R9	DIN 51130
	b) Coefficient of Friction	Manufacturer to declare	Manufacturer to declare	>0.42	>0.42	ISO 10545-17 / ANSI A 326.3
9	Bulk Density, in (g/cc)	≥2.0	≥2.0	>2.2	>2.2	ASTM C373-16 / IS 13630-2
10	Moisture Expansion	Manufacturer to declare	Max 0.02 mm/m	≤0.02 mm/m	≤0.02 mm/m	IS 13630-part 3 / ISO 10545-10
11	Frost Resistance	Manufacturer to declare	Manufacturer to declare	No damage	No damage	ISO 10545-12 / IS 13630-10
12	Color Resistance to UV Light	Manufacturer to declare	report result	No change in color	No change in color	DIN 51094
	C) Chemical Properties					
1	Resistance to Concentrated HNO₃ & H₂SO₄ Acid (wt. Loss)	-	<1.5 %	<0.8%	<0.8 %	IS 4457:2007 Annex G
	Resistance to Chemicals					
2	a) Resistance to Low concentrations of acids & alkalies	Manufacturer to declare	Manufacturer to declare	ULA/GLA	ULA/GLA	ISO 10545-13 / IS 13630-8
	b) Resistance to High concentrations of acids & alkalies	Manufacturer to declare	Manufacturer to declare	UHA/GHA	UHA/GHA	
	c) Resistance to household chemicals and swimming pool salts	Min B	AA min	B(ISO)/AA (IS )	B(ISO)/AA( IS )	
3	Stain Resistance	Min Class 3	Class 1 min	Class 3 (ISO)/ Class 1 (IS )	Class 3 (ISO)/ Class 1 (IS )	ISO 10545-14 / IS 13630-8
	D) Thermal Properties					
1	Linear Thermal Expansion	Report value	≤7x10⁻⁶K⁻¹	≤7 x 10⁻⁶K⁻¹	≤7 x 10⁻⁶K⁻¹	ISO 10545-8 / IS 13630-4
2	Thermal Shock Resistance	-	10 Cycle, Min	No damage	No damage	ISO 10545-9 / IS 13630-5

# Ramp Test: Suitable for all kind of surfaces (Plain, structural..etc)

# Slider (BOT -3000E Digital Tribometer): Suitable for plain / smooth surface and not working for structural / profiled surface