























**Grandura**  
Vitrified Exteriors

CHARACTERISTICS	Requirement as per ISO 13006:2018 Gr Bla E ≤ 0.5%	Requirement as per IS 15622:2017 Gr Blb 0.08 ≤ E ≤ 3.0%	AGL Value	Test Method
<b>(A) DIMENSION &amp; SURFACE QUALITY</b>				
 Deviation In Length & Width	± 0.3%, ± 1.0 mm	± 0.1%	± 0.1%	ISO 10545 Part-2 IS 13630 Part-1
 Deviation In Thickness	± 5.0%, ± 0.5 mm	± 5.0%	± 3.0%	ISO 10545 Part-2 IS 13630 Part-1
 Straightness of Edge	± 0.3%, ± 0.8 mm	± 0.1%	± 0.1%	ISO 10545 Part-2 IS 13630 Part-1
 Rectangularity	± 0.3%, ± 1.5 mm	± 0.1%	± 0.1%	ISO 10545 Part-2 IS 13630 Part-1
 Surface Flatness	± 0.4%, ± 1.8 mm	± 0.5%	± 0.2%	ISO 10545 Part-2 IS 13630 Part-1
 Surface Quality	Min. 95% of Tiles shall be free from visible defects that would impair the appearance of a major area of the tiles	Min. 95% of Tiles shall be free from visible defects that would impair the appearance of a major area of the tiles	Min. 95% of Tiles shall be free from visible defects that would impair the appearance of a major area of the tiles	ISO 10545 Part-2 IS 13630 Part-1
<b>(B) PHYSICAL &amp; THERMAL PROPERTIES</b>				
 Water Absorption % By Wt.	≤ 0.5, Ind. 0.6 Max.	0.08 ≤ E ≤ 3.0 Ind. 3.3 Max.	≤ 0.5	ISO 10545 Part-3 IS 13630 Part-2
 Flexural Strength (MOR) In N/mm²	Avr. 30, Ind. Min. 27	Avr. 30, Ind. Min. 27	≥ 35 N/mm²	ISO 10545 Part-4 IS 13630 Part-6
 Breaking Strength in N	1300 N Min.	1100 N Min.	> 1800 N	ISO 10545 Part-4 IS 13630 Part-6
 Bulk Density (gm/cc)	2.0 Min.	2.0 Min.	≥ 2.2	ISO 10545 Part-3 IS 13630 Part-2
 Resistance to Surface Abrasion	Manufacturer to State Class	PEI II Min	Min. PEI IV	ISO 10545 Part-7 IS 13630 Part-11
 Co-efficient of Linear Thermal Expansion from ambient temp to 100°C (K <sup>-1</sup> )	9x10 <sup>-6</sup> Max.	7x10 <sup>-6</sup> Max.	≤ 6x10 <sup>-6</sup>	ISO 10545 Part-8 IS 13630 Part-4
 Thermal Shock Resistance	10 Cycle Min.	10 Cycle Min.	No Damage after 10 Cycles	ISO 10545 Part-9 IS 13630 Part-5
 Moisture Expansion in mm/M	Test Method Available	0.02 Max.	Nil	ISO 10545 Part-10 IS 13630 Part-3
 Crazeing Resistance	Required	4 Cycle at 7.5 bar Min.	Resistance	ISO 10545 Part-11 IS 13630 Part-9
 Frost Resistance	Resistance	Resistance	Resistance	ISO 10545 Part-12 IS 13630 Part-10
 Moh'S Scratch Hardness	Min. 5	Min. 5	≥ 7	EN 101 IS 13630 Part-13
<b>(C) CHEMICAL PROPERTIES</b>				
 Resistance To House hold Chemicals	No Damage	Min. Class AA	Class AA	ISO 10545 Part-13 IS 13630 Part-8
 Resistance To Acids & Alkalis (Except HF Acid)	No Damage	Min. Class AA	Class AA	ISO 10545 Part-13 IS 13630 Part-8
 Stain Resistance	Min. Class 3	Min. Class 1	Class 1	ISO 10545 Part-14 IS 13630 Part-8

Packing Specification

Size (mm)	Thickness (mm)	Weight (Kg.)	No. of Tiles / Box	Area Sq. mtr./ Box
400x400mm (Grandura+)	12 mm	19.5 kg.	05 pcs.	0.80m <sup>2</sup>
300x300mm (Grandura+)	9 mm	14.5 kg.	08 pcs.	0.72m <sup>2</sup>
300x300mm (Grandura)	9 mm	17.5 kg.	10 pcs.	0.90m <sup>2</sup>