



Technical Properties - Naturals, Specification and Industrial Ranges

All products are manufactured under a quality system registered to ISO 9001 and in compliance with BS EN 14411 (ISO 10545). The table below illustrates compliance of all Naturals, Specification and Industrial ranges to the current British/European/International standards.

Specification Property	Standard for Test Method	ISO 13006: 1998(E) Specification	Actual Results (Range average)		
			Naturals	Specification	Industrial
Pass = Conforms to standard					
Deviation in Length and Width	ISO 10545-2	± 1% (max)	Pass	Pass	Pass
Deviation in Thickness	ISO 10545-2	± 10% (max)	Pass	Pass	Pass
Straightness of Sides	ISO 10545-2	±0.5% (max)	Pass	Pass	Pass
Rectangularity	ISO 10545-2	± 1% (max)	Pass	Pass	Pass
Surface Flatness - curvature	ISO 10545-2	± 0.5% (max)	Pass	Pass	Pass
Surface Flatness - Warpage	ISO 10545-2	± 0.8% (max)	Pass	Pass	Pass
Surface Quality	ISO 10545-2	95% (min) conform	Pass	Pass	Pass
Water Absorption - Naturals	ISO 10545-3	≤ 6%	Pass	-	-
Water Absorption - Specification & Industrial	ISO 10545-3	≤ 3%	All ≤ 6%	≤ 3%	≤ 1.5%
Bulk Density	ISO 10545-3	no requirement	2.0 g/cm ³	2.2 g/cm ³	2.2 g/cm ³
Modulus of Rupture - Naturals	ISO 10545-4	20 N/mm ² (min)	Pass	-	-
Modulus of Rupture - Specification & Industrial	ISO 10545-4	23 N/mm ² (min)	-	Pass	Pass
Breaking Strength - Naturals	ISO 10545-4	950 N (min)	Pass	-	-
Breaking Strength - Specification & Industrial	ISO 10545-4	1100 N (min)	-	Pass	Pass
Resistance to Deep Abrasion - Naturals	ISO 10545-6	393mm ³ (max)	Pass	-	-
Resistance to Deep Abrasion - Specification & Industrial	ISO 10545-6	275mm ³ (max)	-	Pass	Pass
Linear Thermal Expansion	ISO 10545-8	10 x 10 ⁻⁶ (max)	Pass	Pass	Pass
Resistance to Thermal Shock	ISO 10545-9	10 cycles - no visible effect	Pass	Pass	Pass
Frost Resistance	ISO 10545-12	100 cycles - no damage	Pass	Pass	Pass
Chemical Resistance	ISO 10545-13	17 day immersion - no visible effect	Pass	Pass	Pass
Coefficient of Friction (using 4S Rubber) - Dry	BCRA Tortus	μ = 0.4 minimum	μ = > 0.74	μ = > 0.74	μ = > 0.74
Coefficient of Friction (using 4S Rubber) - Wet	BCRA Tortus	μ = 0.4 minimum	μ = > 0.74	μ = > 0.74	μ = > 0.74
Resistance to Salt Attack	AS/NZS 4456.10	40 cycles - < 0.4g loss	Pass	Pass	Pass
Resistance to Acid	SS - 301	< 3% weight loss	-	-	Pass
Scratch Hardness - MOH's	EN 101	6 MOH's minimum	6	7	7
Slip Resistance- Plain tiles Quarrundum	ISO 10545-17		R11 R12	R11 R12	R11 R12