

		WEIGHT PER M <sup>2</sup>	SIZE TOLERANCE		SLIP RESISTANCE (UNSEALED)			FLEXURAL STRENGTH (MPa)		MODULUS OF RUPTURE (MPa)		SALT RESISTANCE (% MEAN WEIGHT LOSS)		WATER ABSORPTION (MEAN)		BULK SPECIFIC GRAVITY (KG/M <sup>3</sup> )	
			kg / (thickness)	Dimension	Thickness	Oil-Wet Ramp	Mean BPN/SRV	Classification	Dried Strength	Soaked Strength	Dried	Soaked	Not Sealed	Dry Treat 40SK	% by Weight		% by Volume
<b>FLOORING</b>																	
<b>SANDSTONE</b>	Beauford*	Heavily Distressed	75 (30mm)	+/-2mm	+/-2mm												
	Bolzano	Sawn	71 (30mm)	+/-2mm	+/-2mm			6.8	4.6			0.14 (A Grade)		3.46	8.17	2365	
	Brannon	Sawn	67 (30mm)	+/-2mm	+/-3mm		68	P5			7.9	3.6	88.6 (D Grade)		6.30	13.98	2219
		Lightly Honed					54	P4									
	Bullen	Sawn	70 (30mm)	+/-2mm	+/-3mm		66	P5			13.3	8.3	1.0 (B Grade)		4.82	11.13	2309
		Lightly Honed					52	P4									
	Camelhaas*	Antique	46 (20mm)	+/-2mm	+/-3mm												
	Osprey	Sawn	65 (30mm)	+/-2mm	+/-2mm		53	P4			6.5	4.9	34.4 (D Grade)	0.2 (A Grade)	6.54	14.08	2153
	Toolara	Distressed	45 (18mm)	+/-2mm	+/-2mm		57	P5			8.2	5.1	14.0 (D Grade)	0.1 (A Grade)	3.22	7.91	2458

\* Beauford is a mixture of stones, slip resistance cannot be determined comprehensively.

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**WATER ABSORPTION** > A measure of the porosity of a stone and can also be an indicator of a stone's general durability. A stone that has a greater water absorption will also tend to absorb stains more readily. In general, the lowest water absorption is desired. ASTM C97.

**SLIP RESISTANCE** > The slip resistance of a stone can vary considerably depending on the density, porosity, grain size, surface roughness and level of finish. As a general rule of thumb the rougher and more porous the stone, the greater the slip resistance. Exfoliated surfaces generally provide a better resistance to slip than a honed or polished finish.

The wet pendulum (BPN test) according to AS 4586 is the most useful slip rating test for common or public areas. The portable device consists of a weighted foot which comprises a spring-loaded rubber test slider that exerts a prescribed force over the stone as it slides across the wetted surface. The results are expressed as a British Pendulum Number (or Skid Resistance Value SRV). An (R) rating refers to a product that has been tested using the Oil-wet Ramp Test. This is usually performed with motor oil being used instead of water and safety boots replacing bare foot. An R11 is generally the minimum required product for external finishes.

**SLIP CLASSIFICATIONS**

- P5 = Very Low (SRV > 54)
- P4 = Low (SRV 45-54)
- P3 = Moderate (SRV 35-44)
- P2 and P1 = High (SRV 25-34 and 12-24 respectively)
- P0 = Very High (SRV < 12)

(Very low - as contribution to risk of slipping)

**STRENGTH TESTING**

**Compressive Strength** > is the measure of the resistance to crushing loads. The compressive strength is the maximum load per unit area that the stone can bear without crushing. In reference to a stone wall, the stone at the base of the wall would have to withstand the compressive load of the weight of stones above. ASTM C170

**Flexural Strength** > (or bending strength) is a measure of a stone's tensile strength induced by bending. The test load on top of the stone is not applied to a single location at mid span but rather distributed with half of the load applied at each of two points one quarter of the span from the supports. In this way, the entire centre half of the stone is subjected to the same maximum bending forces. Thus any local weakness such as vein is more likely to be reflected in the flexural strength test. ASTM C880

**Modulus of Rupture (MoR)** >

In contrast to the flexural strength test, to determine the MoR force is applied directly at the mid point of the span. The stone is more likely to fail directly under the load or point of force rather than at a vein or point of weakness in the material. ASTM C99

**SALT RESISTANCE TESTING** >

Testing for salt attack involves repeated cycles of full immersion of sample units in a sodium sulphate (or sodium chloride) solution for a period of time and overnight drying, once carried out numerous times the sample/residue is weighed to determine mean % weight loss. AS/NZS 4586 Method A

\*\* Due to the variability of natural stone, results are indicative.