

			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>BLUESTONE</b>	Bluestone	Sawn	55 (20mm)	+/-2mm	+/-2mm	R11	64	V	19.7	19.9								2710		
		Honed				R10	35	X												
		Bush Hammered					68	V												
		Sandblasted					63	V												
		Scratched					51	W												
	Euro Bluestone	Sawn	56 (20mm)	+/-2mm	+/-2mm		68	P5			15.0	12.4	< 0.10 (AA Grade)					1.19	3.10	2604
		Honed					33	P2												
		Heavily Distressed					29	P2												
	Heron	Exfoliated & Trp Br	58 (20mm)	+/-2mm	+/-2mm		42	X			21.1	20.2	0.35 (A Grade)					0.50	1.44	2890
		Exfoliated & Sgl Br					49	W												
	Pacific Bluestone	Antique	55 (20mm)	+/-3mm	+/-3mm		52	P4			21.7	18.1	< 0.10 (AA Grade)					0.09	0.24	2707
	Torino	Brushed anti-slip	47 (20mm)	+/-2mm	+/-2mm		51	P4	6.4	4.6				1.9% (B Grade)				3.46	8.00	2310
		Brushed					26	Y												
		Sawn					62	V												

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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

**NOTE** >

As natural stone is inherently variable, testing results are indicative only.