

ECO OUTDOOR® | PRODUCT TECH DATA

			WEIGHT PER M ²		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 ³)		
			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				
FLOORING																				
BLUESTONE	Bluestone	Sawn	55 (20mm)	+/-2mm	+/-2mm	R11	64	V	19.7	19.9						0.44	1.19	2710		
	Euro Bluestone	Tumbled	60 (30mm)	+/-2mm	+/-2mm						15.0	12.4	< 0.10 (AA Grade)			1.19	3.10	2604		
	Pacific Bluestone	Tumbled	55 (20mm)	+/-3mm	+/-3mm		52	P4			21.7	18.1	< 0.10 (AA Grade)			0.09	0.24	2707		
	Torino	Brushed anti-slip Sawn	47 (20mm)	+/-2mm	+/-2mm		51	P4	6.4	4.6			1.9% (B Grade)			3.46	8.00	2310		
COTTO	Antico Luce	Natural	42 (23mm)	+/-8mm								4.6								
	Antico Arrotato	Natural																		
	Antico Carbone	Natural	47 (25mm)	+/-2mm	+/-2mm															
	Antico Nero	Natural																		
	Antico Notte	Natural																		
CRAZY PAVING	Beauford*	Sandblasted	50 (22mm)		+/-2mm															
	Bluestone	Sawn	55 (20mm)		+/-2mm	R11	64	V	19.7	19.9					0.44	1.19	2710			
	Bolzano	Sawn	71 (30mm)		+/-2mm				6.8	4.6					3.46	8.17	2365			
	Brannon	Sawn	67 (30mm)		+/-3mm		68	P5			7.9	3.6	88.6 (D Grade)		6.30	13.98	2219			
	Bullen	Sawn	70 (30mm)		+/-3mm		66	P5			13.3	8.3	1.0 (B Grade)		4.82	11.13	2309			
	Endicott	Split	50 (15-30mm)		+/-10mm		59	P5	18.98 N/mm ² EN 12372						0.50		2700			
	Luca	Split	80 (20-40mm)		+/-10mm				22.9 N/mm ² EN 12372						0.31		2700			
	Osprey	Sawn	65 (30mm)		+/-2mm		53	P4			6.5	4.9	34.4 (D Grade)	0.2 (A Grade)	6.54	14.08	2153			
	Porphyry	Split	70 (20-40mm)		+/-10mm				25.1 Post freeze-thaw cycles: 22.4 UNI EN 12372:2007			20.4			1.00		Average apparent density: 2555 UNI EN 1936:2007			
	Scala	Sawn	47 (20mm)		+/-3mm		58	V							0.90	2.4	2691			
FILETTI	Garonne	Tumbled	53 (20mm)		+/-2mm		51	P4			12.7	8.1	2.7 (B Grade)		2.07	5.26	2544			
	Pacific Bluestone	Tumbled	70 (25mm)		+/-2mm					21.7	18.1	< 0.10 (AA Grade)		0.09	0.24	2707				
	Pendell	Tumbled	52 (20mm)		+/-2mm		51	P4			13.1	10.8	0.7 (A Grade)		2.32	5.77	2488			
	Scala	Tumbled	47 (20mm)		+/-2mm						12.0	10.6	0.12 (A Grade)		2.19	5.07	2330			
GRANITE	Buffalo	Exfoliated	61 (20mm)	+/-2mm	+/-2mm										0.10					
	Emu	Exfoliated Sandblasted	53 (20mm)	+/-2mm	+/-2mm		61	P5	13.1	10.6	11.0	9.1			0.29	0.76	2636			
	Fallow	Exfoliated					67	P5												
		Exfoliated & Sgl Br					55	P5												
		Exfoliated & Dbl Br					51	P4												
		Exfoliated & Trip Br					49	P4												
		Exfoliated					57	V												
	Forest	Exfoliated Honed	63 (20mm)	+/-2mm	+/-2mm				17.1	16.9			0.06 (AA Grade)	0.06 (AA Grade)	0.05	0.16	3151			
	Lizard	Exfoliated Bush Hammered	60 (20mm)	+/-2mm	+/-2mm															
	Mallard	Exfoliated & Trip Br	58 (20mm)	+/-2mm	+/-2mm		43	X			16.3	12.6	0.08 (AA Grade)		0.21	0.62	2900			
	Raven	Exfoliated Honed	60 (20mm)	+/-2mm	+/-2mm	R13 R9			21.8	22.2					0.11	0.33	2971			
	Tawny	Exfoliated	53 (20mm)	+/-2mm	+/-2mm															
	Tortoise	Bush Hammered & Sgl Br	53 (20mm)	+/-2mm	+/-2mm															
	Sable	Exfoliated	53 (20mm)	+/-2mm	+/-2mm		57	P5			14.7	12.1	< 0.10 (AA Grade)		0.22		2839			
	HAND PRESSED CEMENT	All Colours	Standard finish	40 (16mm)				28	P2											
		Sandblasted					55	P5												
LIMESTONE	Andorra	Brushed	55 (19mm)	+/-2mm	+/-3mm		43	P3			15.6	9.8	0.5 (A Grade)		1.25	3.27	2617			
	Arbon	Tumbled	38 (15mm)	+/-2mm	+/-3mm		51	P4			13.1	10.8	0.7 (A Grade)		2.32	5.77	2488			
	Calcetta	Heavily Distressed	46 (18mm)	+/-2mm	+/-3mm		59	P5			12.7	8.1	2.7 (B Grade)		2.07	5.26	2544			
	Chalford	Heavily Distressed Sandblasted	47 (18mm)	+/-2mm	+/-3mm		55	P5			15.6	9.8	0.5 (A Grade)		1.25	3.27	2617			
	Colmar	Brushed	50 (20mm)	+/-2mm	+/-3mm		37	P3			9.6	7.2	3.0 (B Grade)		2.84	7.02	2478			
	Dover	Antique Sandblasted	32 (12mm)	+/-2mm	+/-3mm		27	P2			14.8	11.8	0.10 (A Grade)		0.08	0.23	2702			
	Duro	Sandblasted	51 (20mm)	+/-2mm	+/-3mm		62	P5			16.6	12.3	0.29 (A Grade)		1.56	4.01	2565			
	Garonne	Tumbled	38 (15mm)		+/-3mm		51	P4												
		Sandblasted & Brushed	53 (20mm)	+/-2mm	+/-3mm		40	P3			12.7	8.1	2.7 (B Grade)		2.07	5.26	2544			
	La Roche	Heavily Distressed	52 (20mm)	+/-2mm	+/-3mm		38	X	14.1	13.1			0.15 (A Grade)		0.94	2.47	2615			
	Linton	Lightly Distressed	47 (18mm)	+/-2mm	+/-3mm		60	P5			13.1	10.8	0.7 (A Grade)		2.32	5.77	2488			
	Nettle	Antique	55 (20mm)	+/-2mm	+/-3mm		28	P2					0.15 (A Grade)		0.94	2.47	2615			
	Rhone	Sandblasted Sandblasted & Brushed	60 (20mm)	+/-2mm	+/-3mm		54	P4							0.94	2.47	2615			
							39	P3			9.7	8.7	0.20 (A Grade)		0.71		2773			
	Sarelle	Hand Sandblasted	47 (18mm)	+/-2mm	+/-3mm		57	P5			12.7	8.1	2.9 (B Grade)		2.07	5.26	2544			
	Winbourne	Tumbled	56 (20mm)	+/-2mm	+/-3mm		41	P3					0.10 (A Grade)		1.11	2.90	2611			
	Woodford*	Antique	50 (20mm)	+/-2mm	+/-3mm															
	Wyndam	Lightly Distressed	47 (18mm)	+/-2mm	+/-3mm		39	P3			15.6	9.8	0.5 (A Grade)		1.25	3.27	2617			
	SANDSTONE	Beauford*	Heavily Distressed	75 (30mm)	+/-2mm	+/-2mm										0.14 (A Grade)		3.46	8.17	2365
		Bolzano	Sawn	71 (30mm)	+/-2mm	+/-2mm				6.8	4.6									
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			
SPLIT STONE	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			
	Abyss	Natural Split	33 (12mm)	+/-2mm	+/-3mm		54	W	46.1	31.6					0.29	0.79	2730			
	Atlantic	Natural Split	33 (12mm)	+/-2mm	+/-3mm		54	W	46.1	31.6					0.23	0.63	2733			
TRAVERTINE	Endicott	Natural Split	68 (25mm)	+/-10mm	+/-10mm		59	P5	18.98 N/mm ² EN 12372						0.50		2700			
	Lichen	Natural Split	33 (12mm)	+/-2mm	+/-3mm		53	P4	46.1	31.6					EN 13755	0.31	0.85	2725		
	Luca	Natural Split	80 (30mm)	+/-10mm	+/-10mm				22.9 N/mm ² EN 12372											
	Porphyry	Natural Split Tumbled	77 (30mm)	+/-10mm	+/-10mm				25.1 Post freeze-thaw cycles: 22.4 UNI EN 12372:2007			20.4			1.00		Average apparent density: 2555 UNI EN 1936:2007			

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

* Beauford, Camelhaas, & Woodford products are a blend of materials; slip resistance cannot be determined comprehensively.

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