ECO OUTDOOR | PRODUCT TECH DATA

			WEIGHT PER M²	SIZE TOLERANCE		SLIP RESISTANCE (UNSEALED)			FLEXURAL STRENGTH (MPa)		MODULUS OF RUPTURE (MPa)		SALT RESISTANCE (% MEAN WEIGHT LOSS)		WATER ABSORPTION (MEAN)		BULK SPECIFIC GRAVITY (KG/M³)
			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	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									
COTTO	Antico Luce	Natural	42 (23mm)	+/-10mm	+/-2mm						4.6 Post freeze-thaw cycles: 5.2						
	Antico Arrotato	Natural	47 (25mm)														
	Antico Carbone	Natural															
	Antico Nero	Natural															
	Antico Notte	Natural															
	Antico Panna	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			0.14 (A Grade)		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/mm² EN 12372						0.50 EN 13755		2700 Test Method: EN 1936
	Luca	Split	80 (20-40mm)		+/-10mm				22.9 N/mm² EN 12372						0.31 EN 13755		
	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 UNI EN 13755:2008		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	+/-2mm		51	P4			12.7	8.1	2.7 (B Grade)		2.07	5.26	2544
	Pacific Bluestone	Tumbled	70 (25mm)								21.7	18.1	< 0.10 (AA Grade)		0.09	0.24	2707
	Pendell	Tumbled	52 (20mm)				51	P4			13.1	10.8	0.7 (A Grade)		2.32	5.77	2488
	Scala	Tumbled	47 (20mm)								12.0	10.6	0.12 (A Grade)		2.19	5.07	2330
GRANITE	Buffalo	Exfoliated	61 (20mm)	+/-2mm	+/-2mm										0.10		
	Emu	Exfoliated	53 (20mm)	+/-2mm	+/-2mm		61	P5	13.1	10.6	11.0	9.1			0.29	0.76	2636
		Sandblasted					67	P5									
	Fallow	Exfoliated	53 (20mm)	+/-2mm	+/-2mm		60	P5			12.1	10.1	0.06 (AA Grade)		0.27	0.72	2636
		Exfoliated & Sgl Br					55	P5									
		Exfoliated & Dbl Br					51	P4									
		Exfoliated & Trp Br					49	P4									
	Forest	Exfoliated	63 (20mm)	+/-2mm	+/-2mm		57	V	17.1	16.9			0.06 (AA Grade)	0.06 (AA Grade)	0.05	0.16	3151
		Honed															
	Lizard	Exfoliated	60 (20mm)	+/-2mm	+/-2mm												
		Bush Hammered															
	Mallard	Exfoliated & Trp Br	58 (20mm)	+/-2mm	+/-2mm		43	X			16.3	12.6	0.08 (AA Grade)		0.21	0.62	2900
		Exfoliated					57	V									
	Raven	Exfoliated	60 (20mm)	+/-2mm	+/-2mm	R13			21.8	22.2					0.11	0.33	2971
		Honed				R9											
	Tawny	Exfoliated	53 (20mm)	+/-2mm	+/-2mm												
	Tortoise	Bush Hammered & Sgl Br	53 (20mm)	+/-2mm	+/-2mm		53	W									
	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	52 (20mm)	+/-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	Distressed	46 (18mm)	+/-2mm	+/-3mm		59	P5			12.7	8.1	2.7 (B Grade)		2.07	5.26	2544
	Chalford	Heavily Distressed	47 (18mm)	+/-2mm	+/-3mm		55	P5			15.6	9.8	0.5 (A Grade)		1.25	3.27	2617
		Sandblasted					57	P5									
	Colmar	Brushed	50 (20mm)	+/-2mm	+/-3mm		35	P3			9.6	7.2	3.0 (B Grade)		2.84	7.02	2478
	Dover	Antique	32 (12mm)	+/-2mm	+/-3mm		27	P2			14.8	11.8	0.10 (A Grade)		0.08	0.23	2702
		Sandblasted					52	P4									
	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)	+/-2mm	+/-3mm		51	P4			12.7	8.1	2.7 (B Grade)		2.07	5.26	2544
		Sandblasted & Brushed	53 (20mm)				40	P3									
	Jericho	Tumbled	53 (20mm)	+/-2mm	+/-3mm		47	W	14.9	10.6			0.13 (A Grade)		0.70	1.84	2648
	La Roche	Tumbled	52 (20mm)	+/-2mm	+/-3mm		38	X	14.1	13.1			0.15 (A Grade)		0.94	2.47	2615
	Linton	Hand Sandblasted	47 (18mm)	+/-2mm	+/-3mm		60	P5			13.1	10.8	0.7 (A Grade)		2.32	5.77	2488
	Nettle	Heavily Distressed	55 (20mm)	+/-2mm	+/-3mm		28	P2					0.15 (A Grade)		0.94	2.47	2615
	Rhone	Sandblasted	60 (20mm)	+/-2mm	+/-3mm		54	P4			9.7	8.7	0.20 (A Grade)		0.71		2773
		Sandblasted & Brushed					39	P3									
	Sarelle	Hand Sandblasted	47 (18mm)	+/-2mm	+/-3mm		57	P5			12.7	8.1	2.9 (B Grade)		2.07	5.26	2544
	Winbourne	Heavily Distressed	56 (20mm)	+/-2mm	+/-3mm		41	P3					0.10 (A Grade)		1.11	2.90	2611
	Woodford*	Heavily Distressed	50 (20mm)	+/-2mm	+/-3mm												
	Wyndam	Antique Brushed	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												
	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*	Heavily Distressed	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
SPLIT STONE	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
	Endicott	Natural Split	68 (25mm)	+/-10mm	+/-10mm		59	P5	18.98 N/mm² EN 12372						0.50 EN 13755		2700 Test Method: EN 1936
	Lichen	Natural Split	33 (12mm)	+/-2mm	+/-3mm		53	P4	46.1	31.6					0.31	0.85	2725
	Luca	Natural Split	80 (30mm)	+/-10mm	+/-10mm				22.9 N/mm² EN 12372								
	Porphyry	Natural Split	77 (30mm)	+/-10mm	+/-10mm				25.1 Post freeze-thaw cycles: 22.4 UNI EN 12372:2007		20.4				1.00 UNI EN 13755:2008		Average apparent density: 2555 UNI EN 1936:2007
		Tumbled															
TRAVERTINE	Chambon	Sandblasted	46 (18mm)	+/-2mm	+/-3mm		54	P4			17.4	14.8	0.09 (A Grade)		1.40	3.55	2544
	Ravello	Tumbled	30 (12mm)	+/-2mm	+/-3mm		41	X	9.5	10.3	13.3	10.0	0.11 (AA Grade)		1.43	3.48	2439
	Scala	Sawn	47 (20mm)	+/-2mm	+/-3mm		58	V			12.0	10.6	0.12 (A Grade)		2.19	5.07	2330
		Honed & Filled					35	X									
	Tolfa	Tumbled	30 (12mm)	+/-2mm	+/-3mm		41	X	9.5	10.3	13.3	10.0	0.11 (AA Grade)		1.43	3.48	2439
WALLING																	
DRY STONE	Alpine	Natural Split	77 (20-40mm)														
	Baw Baw	Natural Split	160 (45-80mm)														
	Jindera	Natural Split	75 (20-40mm)														
	Mitta Mitta	Natural Split	78 (20-40mm)														
	Siltstone	Natural Split	50 (35-45mm)														
FREE FORM	Bodega	Natural Split	72 (20-40mm)														
	Bokara	Natural Split	73 (30-50mm)														
	Bullhorn	Antique	74 (20-40mm)														
	Calabor	Natural Split	82 (30-50mm)														
	Canyonfell	Natural Split	82 (30-50mm)														
	Crackenback	Natural Split	70 (20-40mm)														
	Finch	Natural Split	82 (30-50mm)														
	Howqua	Natural Split	75 (20-40mm)														
	Korora	Natural Split	75 (20-40mm)														
	Tilbrook	Natural Split	71 (20-40mm)														
	Wamberal	Natural Split	82 (30-50mm)														
	Wolfback	Natural Split	82 (30-50mm)														
LINEAR WALLING	Abyss	Natural Split	33 (12mm)	+/-2mm	+/-3mm		54	W	46.1	31.6					0.31	0.85	2725
	Colmar	Brushed	50 (20mm)	+/-2mm	+/-3mm		35	P3			9.6	7.2	3.0 (B Grade)		2.84	7.02	2478
	Lichen	Natural Split	33 (12mm)	+/-2mm	+/-3mm		53	P4	46.1	31.6					0.31	0.85	2725
	Roda	Sawn	55 (20mm)	+/-2mm	+/-2mm		62	P5			17.7	16.3	0.08 (AA Grade)		0.16	0.43	2729
	Sancerre	Hand Chiselled	55 (20mm)	+/-2mm	+/-2mm												
		Sawn															
	Scala	Sawn	47 (20mm)	+/-2mm	+/-3mm												
RANDOM ASHLAR	Apollo	Natural Split	60 (15-35mm)														
	Clancy	Natural Split	90 (15-35mm)														
	Coolum	Natural Split	60 (15-35mm)														
	Newport	Natural Split	82 (30-50mm)														
TRADITIONAL FORMAT	Barlow	Sandblasted	45 (18mm)	+/-2mm	+/-3mm						8.2	5.1	14.0 (D Grade)		3.22	7.91	2458
	Barrimah	Split	76 (20-40mm)														
	Broma	Split	65 (20-30mm)														
	Scala	Split	91 (30-40mm)								12.0	10.6	0.12 (A Grade)		2.19	5.07	2330
PROJECT STONE																	
PROJECT STONE	Bolzano	Honed	71 (30mm)	+/-2mm	+/-2mm		54	W	6.8	4.6			0.14 (A Grade)		3.46	8.17	2365
		Sandblasted					64	V									
	Caldare	Silk	52 (20mm)	+/-2mm	+/-2mm		28	P2			29.1	21.9	0.08 (AA Grade)		1.34	3.45	2585
	Ceppo di Gre	Sawn	75 (20mm)	+/-2mm	+/-2mm												
	Cocullo	Honed	47 (20mm)	+/-2mm	+/-2mm		41	X			8.3	4.2	4.6 (B Grade)	0.35 (A Grade)	4.12	9.7	2355
		Brushed					27	Y									
	Cullera	Honed	54 (20mm)	+/-2mm	+/-2mm		36	X			19.4	12.9	0.07 (AA Grade)		0.24	0.65	2698
		Flamed					59	V									
		Flamed & Brushed					30	Y									
	Dauville	Sandblasted	49 (20mm)	+/-2mm	+/-2mm		66	V			13.9	9.4	1.2 (A Grade)		3.14	7.72	2455
		Honed					38	X									
	Lagano	Flamed	27 (10mm)	+/-2mm	+/-2mm		52	W	17.7	23.4			0.07 (AA Grade)		0.19	0.51	2684
		Flamed & Brushed					47	P4									
		Honed					17	P1									
	Laguna	Honed	52 (20mm)	+/-2mm	+/-2mm		32	P2			15.3	15.9	0.10 (A Grade)		0.78	2.03	2612
		Brushed					43	P3									
	Scala V	Sawn	47 (20mm)	+/-2mm	+/-3mm												
	Seron	Honed	44 (20mm)	+/-2mm	+/-2mm		48	W			7.4	4.0	25.8 (D Grade)		6.67	14.63	2193
		Brushed					42	X									
	Seville	Honed	54 (20mm)	+/-2mm	+/-2mm		39	X			15.3	8.2	0.25 (A Grade)		0.57	1.52	2677
		Brushed					36	X									
		Flamed					63	V									
	Trusco	Honed	71 (30mm)	+/-2mm	+/-2mm		59	V	6.6	5.3			5.7 (C Grade)		3.46	8.17	2365
		Sandblasted					65	V									

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.**

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