



Cove Red Sandstone

Technical Data Sheet

Cove Red Sandstone

Cove Quarry, near Kirk Patrick Fleming, Scotland
Bolehill Quarry, Wingerworth, Derbyshire, S42 6RG

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Grid reference : -- --

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This data sheet was compiled by the Building Research Establishment (BRE)., The data sheet was compiled in November 1997 and updated in June 2000 using BRE test results and data collected in earlier surveys. The work was carried out by BRE as part of a Partners in Technology Programme funded by the Department of the Environment, Transport and the Regions and Blockstone Ltd and does not represent an endorsement of the stone by BRE.

General

The quarry is near Kirk Patrick Fleming, near Annan in Dumfries and Galloway. It was open in the 19th century and records show that it has been used for buildings since at least 1890.

Petrography

Cove Red Sandstone is a sandstone is from the New Red Sandstone of Triassic age. It is a fine-grained stone, red/brown in colour with varying bed definitions. The average block size is 2000mm x 1000mm x 400mm.

Expected Durability and Performance

It is important that the results from the individual tests are not viewed in isolation. They should be considered together and compared to the performance of the stone in existing buildings and other uses. Sandstones from the New Red Sandstone are traditionally acknowledged as generally being a very durable building stone and have been used extensively in many towns and cities in the UK. Cove Red Sandstone appears to be a durable stone that is not effected by acid rain or air pollution. Most sandstones have good frost resistance. The failure in the harsh saturated sodium sulphate crystallisation test indicates susceptibility to salt damage (for example in coastal locations or from de-icing salts). The compressive strength of the stone is towards the lower end of the range for sandstones but is comparable with that for UK limestones.

Overall, Cove should be suitable for use in most aspects of load bearing masonry and cladding but should not be used in areas where a long service life is needed in locations with a high salt concentrations.

Test Results – Cove Red

Safety in Use		
Slip Resistance ^(Note 1)	Not determined	Values > 40 are considered safe.
Abrasion Resistance ^(Note 1)	Not determined	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	116.11 MPa	Loaded perpendicular to the bedding plane ambient humidity
Compression (earlier data)	41 – 56 MPa	Dry. Loaded perpendicular to the bedding

	27 – 33 MPa	wet. Loaded perpendicular to the bedding
	24 – 37 MPa	Dry. Loaded parallel to the bedding
	11 – 25 MPa	Wet. Loaded parallel to the bedding
2) Bending ^(Note 1)	8.52 MPa	Loaded perpendicular to the bedding plane ambient humidity
	4.53 MPa	Loaded parallel to the bedding plane ambient humidity
Porosity and Water Absorption		
1) Porosity ^(Note 3)	15.8%	
	23.4 – 25.4%%	(based on earlier data)

2) Saturation Coefficient ^(Note 3)	0.61	
3) Water Absorption	4.33 % (by wt)	
4) Bulk specific gravity	2243kg/m ³	
	1970-2030kg/m ³	(Based on earlier data)
Resistance to Frost		
Freeze/Thaw Test ^(Note 1)	Not determined	
Resistance to Salt		
Sodium Sulphate Crystallisation Test ^(Note 3)	-0.29% Mean wt loss	
Resistance to Acidity		
Acid Immersion Test ^(Note 4)	Pass	

(Test methods Note 1 = EN1341, Note 2 = EN 1342, Note 3 = EN 1341 /BRE 141, Note 4 = BRE 141)

Tests were carried out at BRE in 1997. N.D. = not determined