



Locharbriggs Sandstone

Technical Data Sheet

Locharbriggs Sandstone

Locharbriggs Quarry, near Dumfries

Locharbriggs, Dumfries, Scotland, DG1 1QS

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Grid reference : NX 984 814

Compiled March 2000

This data sheet was compiled by the Building Research Establishment (BRE). Where possible, data collected in earlier surveys has been used to help interpret the test results. The data sheet was compiled in March 2000 using the results of tests carried out to the proposed European Standards. 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 Cumbria Stone Quarries Ltd and does not represent an endorsement of the stone by BRE.

General

The quarry is situated off the A701 just to the north of the village of Locharbriggs close to the nearby aggregates quarry. This dimension stone quarry is a large quarry in a picturesque setting. Quarry working at Locharbriggs dates from the 1700s and the quarry has been worked continuously from 1890. There are good reserves of stone that can be extracted at several locations. On average the stone is available at depths of 1m on bed although some large blocks are obtainable. The average length of a block is 1.5m but 2.6m blocks can be obtained.

Petrography

Locharbriggs is from the New Red Sandstone of Permian age. It is a medium grained stone ranging in colour from dull red to pink.

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 series are traditionally acknowledged as generally being a very durable building and paving stone and have been used extensively in many towns and cities in the UK. Locharbriggs sandstone appears to be a durable stone that is not effected by acid rain or air pollution. The moderate weight lost in the harsh saturated sodium sulphate crystallisation test indicates limited resistance to salt

damage in very saline environments (for example in coastal locations or from de-icing salts); the stone seems to have good frost resistance. The compressive strength of the stone is towards the lower end of the range for comparable sandstones. The flexural strength is towards the lower end of the range for sandstones and if used for paving then the units may need to be thicker than those for some other sandstones.

Overall, should be suitable for use in most aspects of construction including flooring, paving, load bearing masonry and cladding including areas where a long service life is needed but it may show signs of weathering where subjected to high salt concentrations.

Test Results – Lees Endcliffe Sandstone

Safety in Use		
Slip Resistance ^(Note 1)	Wet: 73	Values > 40 are considered safe.
Abrasion Resistance ^(Note 1)	26	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	47.3 MPa	Loaded perpendicular to the bedding plane ambient humidity

2) Bending ^(Note 1)	5.1 MPa	Loaded perpendicular to the bedding plane ambient humidity
	3.3 MPa	Loaded parallel to the bedding plane ambient humidity
Porosity and Water Absorption		
1) Porosity ^(Note 3)	18.2 – 24.9%	
2) Saturation Coefficient ^(Note 3)	0.65 – 0.68	
3) Water Absorption	5.7 % (by wt)	
4) Bulk specific gravity	2173kg/m ³	
Resistance to Frost		
Flexural strength after Freeze/Thaw Test ^(Note 1)	3.8 MPa	Loaded perpendicular to the bedding plane ambient humidity

Resistance to Salt		
Sodium Sulphate Crystallisation Test (Note 14) (14% solution)	5.8% Mean wt loss	
Sodium Sulphate Crystallisation Test (Note 14) (saturated)	51.0% Mean wt loss	(Note earlier tests give values around 25% weight loss and this is probably more typical of the stone)
Resistance to Acidity		
Acid Immersion Test ^(Note 4)	Pass	All samples passed the test with no splitting or delamination

(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