



# Hall Dale Sandstone

## Technical Data Sheet

### Hall Dale Sandstone

Hall Dale Quarry, near Darley Dale  
Grangemill, Matlock, Derbyshire, DE4 4BW  
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Grid reference : SK 277 635  
Compiled May 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 July 1997, revised in November 1997 and May 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 Stancliffe Stone Company Ltd and does not represent an endorsement of the stone by BRE.

### General

The quarry is located near Hall Moor Wood, near the village of Darley Dale. The quarry is along a track leading into the woods. Three quarries were worked at Hall Dale in the 1960's consisting of the upper, middle and lower quarries. Material from the quarries was transported down the hillside to a big masonry yard operated by Stancliffe Quarry. Hall Dale closed in 1963 and was re-opened in 1984 by Stancliffe Quarries Ltd and has good reserves of stone.

Block sizes of up to 12 tonnes are available with maximum dimensions 1.5 x 2.5 x 2.5 m. The depths of the beds vary from about 500mm up to 1500mm and the lengths vary from 1000mm up to 3000mm.

### Petrography

Hall Dale is from the Millstone Grit of Carboniferous age. Stone from the quarry is fine-grained to coarse grained, yellowish-brown in colour, though the coarser grained material is more yellowish grey.

### 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. Sandstone is traditionally acknowledged as generally being a very durable building and paving stone and has been used extensively in many towns and cities in the UK. Hall Dale

sandstone appears to be a durable stone that will have good resistance to acid rain or air pollution. In addition, the small weight loss in the sodium sulphate crystallisation test indicates resistance to salt damage (for example in coastal locations or from de-icing salts). The frost test indicates the stone should have high frost resistance. The compressive and flexural strength of the stone is just below mid-range for a sandstone and is comparable with many limestones. The density, compressive strength and abrasion test indicate that the stone should be suitable for use in heavily trafficked areas.

Overall, Hall Dale should be suitable for use in all aspects of construction including flooring, paving, load bearing masonry and cladding. Special consideration is required for areas where a long service life is needed especially where high salts are likely to be involved. Hall Dale is predominantly used for ashlar and cladding.

### Test Results – Hall Dale Sandstone (Landers Quarry)

<b>Safety in Use</b>		
Slip Resistance <sup>(Note 1)</sup>	69	Wet Values > 40 are considered safe.
Abrasion Resistance <sup>(Note 1)</sup>	18.4	Values <23.0 are considered suitable for use in heavily trafficked areas
<b>Strength under load</b>		
1) Compression <sup>(Note 2)</sup>	102.2 MPa	Loaded perpendicular to the

		bedding plane ambient humidity
2) Bending <sup>(Note 1)</sup>	8.6 MPa	Loaded perpendicular to the bedding plane ambient humidity
	Not tested	Loaded parallel to the bedding plane ambient humidity
<b>Porosity and Water Absorption</b>		
1) Porosity <sup>(Note 3)</sup>	15.1%	
2) Saturation Coefficient <sup>(Note 3)</sup>	0.66	
3) Water Absorption	4.4 % (by wt)	
4) Bulk specific gravity	2248kg/m <sup>3</sup>	
<b>Resistance to Frost</b>		

Flexural strength after Freeze/Thaw Test <sup>(Note 1)</sup>	7.1 MPa	Loaded perpendicular to the bedding plane ambient humidity
<b>Resistance to Salt</b>		
Sodium Sulphate Crystallisation Test <sup>(Note 3)</sup>	3.81% Mean wt loss	
<b>Resistance to Acidity</b>		
Acid Immersion Test <sup>(Note 4)</sup>	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