



# Stoke Hall Sandstone

## **Technical Data Sheet**

### **Stoke Hall Sandstone**

Stoke Hall Quarry

Grindleford, Hope Valley, Derbyshire, S32 2HW

Contact : Stoke Hall Quarry (Stone Sales) Ltd

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Grid reference : SK 238 769

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This data sheet was compiled by the Building Research Establishment (BRE). It is based on data from current tests at BRE (2000). The data sheet was compiled in May 2000. 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 Stoke Hall Quarry (Stone Sales) Ltd. and does not represent an endorsement of the stone by BRE.

### **General**

Stoke Hall is a large quarry which has been worked since 1835. The stone is extracted from a 24m face which is under 4.5 m of overburden. Sizes are up to 1.5 m on bed with lengths up to 4 m.

### **Petrography**

Stoke Hall is a fine to medium buff coloured stone from the Millstone Grit of Carboniferous age.

### **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. Stoke Hall sandstone appears to be a durable stone that will have good resistance to acid rain or air pollution. In addition, the negligible weight loss in the sodium sulphate crystallisation test indicates good resistance to salt damage under normal conditions. The higher weight loss in the saturated sodium sulphate crystallisation test indicates that special consideration is needed for locations where there is the likelihood of high salts (for example in coastal locations or from de-icing salts). From the frost test the stone should also have excellent frost resistance. The compressive and flexural strength of the stone is mid-range for a sandstone and is comparable with many sandstones. The density and compressive strength indicate that the stone should be suitable for use in moderate to heavily trafficked areas.

Overall, Stoke Hall should be suitable for use in most aspects of construction including flooring, paving, load bearing masonry and cladding. Special consideration is required for areas where a long service life is needed in areas with high salts.

### Test Results – Stoke Hall

<b>Safety in Use</b>		
Slip Resistance <sup>(Note 1)</sup>	71	Wet. Values > 40 are considered safe.
Abrasion Resistance <sup>(Note 1)</sup>	Not tested	Values <23.0 are considered suitable for use in heavily trafficked areas
<b>Strength under load</b>		
1) Compression <sup>(Note 2)</sup>	103.0 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending <sup>(Note 1)</sup>	Not tested	Loaded perpendicular to the bedding plane ambient humidity

	7.7 MPa	Loaded parallel to the bedding plane ambient humidity
<b>Porosity and Water Absorption</b>		
1) Porosity <sup>(Note 3)</sup>	12.6%	
2) Saturation Coefficient <sup>(Note 3)</sup>	0.61	
3) Water Absorption	3.3% (by wt)	
4) Bulk specific gravity	2322kg/m <sup>3</sup>	
<b>Resistance to Frost</b>		
Flexural strength after Freeze/Thaw Test <sup>(Note 1)</sup>	9.3 MPa	Loaded perpendicular to the bedding ambient humidity
<b>Resistance to Salt</b>		
Sodium Sulphate Crystallisation Test <sup>(Note 3)</sup>	-0.72% Mean wt loss	

Sodium Sulphate Crystallisation Test (Note 3) (saturated)	20% 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 2000