



Dunhouse  
Sandstone  
(Grey)

## Technical Data Sheet

### Dunhouse Sandstone (Grey)

Dunhouse Quarry, Winston, Co. Durham  
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Compiled May 2000

This data sheet was compiled by the Building Research Establishment (BRE). Where possible data collected in earlier work Stangers (1986) and collated BRE data (1985, 1996) has been used to help interpret and expand the scope of the BRE test results for 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 Dunhouse Quarry Co. Ltd and does not represent an endorsement of the stone by BRE.

### General

This quarry, near Darlington, has been worked since the early 1900s and has been in the hands of the present owners since 1933. There are good reserves of stone and the potential exists to expand to adjoining fields. Stone is marketed as Dunhouse Grey & Dunhouse Buff and extracted from two faces of 9 to 15m in depth beneath overburden of about 6.5m. The maximum depth of stone on bed is 1.8m, the average being 1.4m.

### Petrography

Dunhouse is from the Millstone Grit of Carboniferous age. It is a fine-grained non-clacareous, slightly micaceous, generally buff coloured stone. Geologically it is classified as a meso-micro crystalline arenite.

### 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 from the Millstone Grit 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. Dunhouse Grey sandstone appears to be a durable stone that is not effected

by acid rain or air pollution. The weight loss in the sodium sulphate crystallisation test indicates modest resistance to salt damage (for example in coastal locations or from de-icing salts). The stone seems to have good frost resistance. The strength of the stone is towards the higher end of the range for sandstones.

Overall, Dunhouse Grey should be suitable for use in most aspects of construction including flooring, load bearing masonry and cladding. At present It is not used for paving, sets or veneers.

### Test Results – Dunhouse Grey

<b>Safety in Use</b>		
Slip Resistance <sup>(Note 1)</sup>	83	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>	137.8 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending <sup>(Note 1)</sup>	17.1 MPa	Loaded perpendicular to the

		bedding plane ambient humidity
	Not Tested	Loaded perpendicular to the bedding plane ambient humidity
<b>Porosity and Water Absorption</b>		
1) Porosity <sup>(Note 3)</sup>	11.7%	
2) Saturation Coefficient <sup>(Note 3)</sup>	0.59	
3) Water Absorption	2.9 % (by wt)	
4) Bulk specific gravity	2357kg/m <sup>3</sup>	
<b>Resistance to Frost</b>		
Flexural strength after Freeze/Thaw Test <sup>(Note 1)</sup>	16.3 MPa	Loaded perpendicular to the bedding plane ambient humidity
<b>Resistance to Salt</b>		

Sodium Sulphate Crystallisation Test (Note 3)	-1.38% 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