



— Dunhouse
Sandstone
(Buff)

Technical Data Sheet

Dunhouse Sandstone (Buff)

Dunhouse Quarry, Winston, Co. Durham
Dunhouse Quarry Works, Staindrop Darlington,
County Durham DL2 3QU, England
Contact : Dunhouse Quarry Ltd
Tel. +44 (0) 1833 660 208; +44 (0) 1833 660 749
FAX +44 (0) 1833 660 748
Email : enquiries@dunhouse.co.uk
Web site : <http://www.dunhouse.co.uk>
Grid reference : NZ 141 183
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 as the quarry has been extended into adjoining fields. Stone is extracted from a single face 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 sandstone. Geologically it is classified as a meso-micro crystalline arenite.

Expected Durability and Performance

It is important that the results from the from 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 Buff 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 but the high weight loss in the harsher saturated sodium sulphate test indicates susceptibility to salt damage in harsh environments (for example in coastal locations or from de-icing salts). The stone seems to have moderate frost resistance. The strength of the stone is towards the lower third of the range for sandstone but is similar to the stronger limestones. The abrasion resistance for Buff is quite low and the stone may wear if used in heavily trafficked areas.

Overall, Dunhouse Buff should be suitable for use in most aspects of construction including flooring, load bearing masonry and cladding. It should not be used in areas when a long service life is needed in a location where high salt concentrations are expected, or for flooring in heavily trafficked areas. It is not used for paving, sets or veneers.

Test Results – Dunhouse – Buff

Safety in Use		
Slip Resistance ^(Note 1)	82 (79 – 82 range)	Wet Values > 40 are considered safe.
Abrasion Resistance ^(Note 1)	26.9	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	84.1 MPa	Loaded perpendicular to the

		bedding plane ambient humidity
2) Bending ^(Note 1)	6.8 MPa	Loaded perpendicular to the bedding plane ambient humidity
	Not Tested	Loaded perpendicular to the bedding plane ambient humidity
Porosity and Water Absorption		
1) Porosity ^(Note 3)	17.0% (16 – 18 range)	
2) Saturation Coefficient ^(Note 3)	0.61 (0.61 – 0.68 range)	
3) Water Absorption	4.7 % (by wt) (4.4 – 5.2 range)	
4) Bulk specific gravity	2202kg/m ³ (2180 – 2202 range)	

Resistance to Frost		
Flexural strength after Freeze/Thaw Test ^(Note 1)	6.0 MPa	
Resistance to Salt		
Sodium Sulphate Crystallisation Test ^(Note 3)	1.89% Mean wt loss	
Sodium Sulphate Crystallisation Test ^(Note 14)	84 – 89% 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