



Naylor Hill Sandstone

Technical Data Sheet

Naylor Hill Sandstone

Naylor Hill Quarry

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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 Gillson & son (Haworth) Ltd and does not represent an endorsement of the stone by BRE.

General

Naylor Hill Quarry is situated near Keighley and has been in operation for 70 years with the saw works and quarry workings. The working face is some 20 m high. Quarried block sizes are up to 2 x 3 x 1.5 m. There are good reserves of stone.

Petrography

Naylor Hill Sandstone is a medium grained yellow/buff or grey buff brown coloured sandstone with rose banding 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. Naylor Hill sandstone appears to be a durable stone that has 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 (for example in coastal locations or from de-icing salts). The compressive and flexural strength of the stone is high for a sandstone and should also have good frost resistance. The density and compressive strength indicate that the stone has good abrasion resistance and should be suitable for use in heavily trafficked areas.

Overall, Naylor Hill Sandstone should be suitable for use in most aspects of construction including flooring, paving, and load bearing masonry. The stone should be suitable for areas where a long service life is needed. At present, the stone is mainly used for paving and not normally used for cladding.

Test Results – Naylor Hill sandstone

Safety in Use		
Slip Resistance ^(Note 1)	82.7	Wet. Values > 40 are considered safe.
Abrasion Resistance ^(Note 1)	Not tested	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	139.0 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending ^(Note 1)	16.4 MPa	Loaded perpendicular to the bedding plane ambient humidity

	Not tested	Loaded parallel to the bedding plane ambient humidity
Porosity and Water Absorption		
1) Porosity ^(Note 3)	8.7%	
2) Saturation Coefficient ^(Note 3)	0.69	
3) Water Absorption	2.4% (by wt)	
4) Bulk specific gravity	2437kg/m ³	
Resistance to Frost		
Flexural strength after Freeze/Thaw Test ^(Note 1)	10.4 MPa	Loaded perpendicular to the bedding plane ambient humidity
Resistance to Salt		
Sodium Sulphate Crystallisation Test ^(Note 3)	-0.84% 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 2000