



Stainton Sandstone

Technical Data Sheet

Stainton Sandstone

Stainton Quarry, near Barnard Castle, Co.Durham

Stainton Quarry, Barnard Castle, Durham, DL12 8RB

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Grid Reference : - - - -

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This data sheet was compiled by the Building Research Establishment (BRE)., The data sheet was compiled in November 1997 and updated in June 2000 using BRE test results and data collected in earlier surveys. 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 Natural Stone Products Ltd and does not represent an endorsement of the stone by BRE.

General

The quarry is in the village of Stainton about 2 miles east of Barnard Castle. Stone has been quarried in the area since around 1600 and there are good reserves of stone.

Petrography

Stainton sandstone is from the Coal Measures of Carboniferous Age. It is a fine-grained stone, buff in colour with a fine brown speckle. Stone is extracted from a 10.5m face below about 3.6m of overburden. Large blocks are available but it is generally supplied at depths of 1.2 – 1.5m on bed.

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. Sandstones from the Carboniferous 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. Stainton sandstone appears to be a durable stone that is not effected by acid rain or air pollution. The high weight lost in the harsh saturated sodium sulphate crystallisation test indicates limited resistance to salt damage in very severe environments (for example in coastal locations or from de-icing salts); sandstones usually have good frost resistance. The compressive strength of the stone is typical of the range for sandstone. The flexural strength is towards the lower end of the range for sandstones and if used for paving then the units may need to be thicker than those for some other sandstones. The abrasion

resistance result suggests that the stone may wear excessively if used in heavily trafficked areas.

Overall, should be suitable for use in most aspects of construction including flooring in lightly trafficked areas, load bearing masonry and cladding.

Test Results – Stainton Sandstone

Safety in Use		
Slip Resistance ^(Note 1)	Wet: 80	Values > 40 are considered safe.
Abrasion Resistance ^(Note 1)	29.0	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	48.0 – 55.3 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending ^(Note 1)	5.9 MPa	Loaded perpendicular to the bedding plane ambient humidity

Porosity and Water Absorption		
1) Porosity ^(Note 3)	17.0 – 17.3%	
2) Saturation Coefficient ^(Note 3)	0.60 – 0.64	
3) Water Absorption	4.8% (by wt)	
4) Bulk specific gravity	2190-2220kg/m ³	
Resistance to Frost		
Freeze/Thaw Test ^(Note 1)	Not determined	Loaded perpendicular to the bedding plane ambient humidity
Resistance to Salt		
Sodium Sulphate Crystallisation Test ^(Note 14) (Saturated)	85 – 98% Mean wt loss	
Resistance to Acidity		

Acid Immersion Test ^(Note 4)	Pass	All samples passed the test with no splitting or delamination
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(Test methods Note 1 = prEN1341, Note 2 = prEN 1342, Note 3 = prEN 1341 /BRE 141, Note 4 = BRE 141)

Tests were carried out at BRE between July and September 1996, additional data from 1986 and the producer are also included)