Stoneraise Red Sandstone

Technical Data Sheet
Stoneraise Red Sandstone
Craggnock Quarry, near Penrith, Cumbria
Bolehill Quarry, Wingerworth, Derbyshire, S42 6RG
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Grid reference : —- —-
Compiled November 1997, updated June 2000

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 Blockstone Ltd and does not represent an endorsement of the stone by BRE.

General

The quarry is on Lazonby Fell, 3 miles north of Penrith on the road between Penrith and Great Salkeld. The new quarry was opened 2 years ago to replace the previous Stoneraise Quarry worked by Realstone since 1973. The old quarry was worked for many years before this date as records show that it has been used for buildings since at least 1900. There are good reserves of stone.

Petrography

Stoneraise Sandstone is from the New Red Sandstone of Permian age. It is a fine- to medium grained stone, pale red or dark pink in colour and it has a sparkle due to the presence of quartz grains. The stone is extracted from a 10m face. The average block size is 1500mm x 900mm x 700mm but greater bed depths are available. There are also shallow beds that provide paving stones.

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 New Red Sandstone 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. Stoneraise Red Sandstone appears to be a durable stone that is not effected by acid rain or air pollution. Most sandstones have good frost resistance. The small weight loss in the harsh saturated sodium sulphate crystallisation test indicates good resistance to salt damage (for example in

coastal locations or from de-icing salts). The compressive strength of the stone is towards the upper end of the range for sandstones.

Overall, Stoneraise should be suitable for use in most aspects of load bearing masonry, cladding and paving including use in areas where a long service life is needed in locations with a high salt concentrations.

Test Results – Stoneraise Red

Safety in Use		
Slip Resistance (Note 1)	Not determined	Values > 40 are considered safe.
Abrasion Resistance (Note 1)	Not determined	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression(Note 2)	75.6 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending (Note 1)	2.9 MPa	Loaded perpendicular to the bedding plane ambient humidity

	5.3 MPa	Loaded parallel to the bedding plane ambient humidity
Porosity and Water Absorption		
1) Porosity (Note 3)	11.09%	(Range 9.3 – 13.9%)
2) Saturation Coefficient (Note 3)	0.49	(Range 0.47 – 0.58)
3) Water Absorption	2.32 % (by wt)	(Range 2.0 – 3.5%)
4) Bulk specific gravity	2351kg/m^3	(Range 2280 – 2351kg/m^3)
Resistance to Frost		
Freeze/Thaw Test (Note 1)	Not determined	Note: the stone Passed Test A using DIN 52 104
Resistance to Salt		

Sodium Sulphate Crystallisation Test (Note 3)	-0.40% Mean wt loss	
Sodium Sulphate Crystallisation Test (Note 14) (saturated)	22% Mean wt loss	All cubes failed before the end of the test
Resistance to Acidity		
Acid Immersion Test(Note 4)	Pass	All samples passed the test with no splitting or delamination

(Test methods Note 1 = prEN1341, Note 2 = prEN 1342, Note 3 = prEN 1341 /BRE 141, Note 4 = BRE 141, Note 5 = ASTM.

All based on BRE test data (1997), BRE 1986 data and data supplied by the producer)