Spangle Purbeck Limestone

Technical Data Sheet
Spangle Purbeck Limestone
St.Aldhelm's Quarry
WorthMatravers, Dorset, BH19 3HL
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This data sheet was compiled by the Building Research Establishment (BRE). Where possible, data collected in earlier surveys has been used to help interpret the test results. The data sheet was compiled in March 2000 using the results of tests carried out to the proposed European Standards. 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 W.J.Haysom and Son and does not represent an endorsement of the stone by BRE.

General

St.Aldhelm's Quarry is reached by following the road through the village of Worth Matravers that is off the B3069 when travelling west. The turn-off to the quarry is then immediately before a farmyard. After following the track for about 1km the quarry can be seen on the right in a dip in the cliffs. The quarry was opened in 1934. The stone is used for walling, door and window surrounds, paving and many other uses. The depth on bed of the Spangle can be as high as 1200mm but it is usually around 600mm. The maximum size quarried is 2000 x 1000 x 600mm. There are very good reserves.

Petrography

The stone worked at the quarry is Purbeck-Portland Limestone from the Portland Beds of Jurassic age. The stone varies in colour with the Spangle being a coarse grained greyish stone with numerous shell fragments.

Expected Durability and Performance

It is important that the results from the sodium sulphate crystallisation tests are not viewed in isolation. They should be considered with the results from the porosity and water absorption tests and the performance of the stone in existing buildings. Stone from this area is traditionally used as walling and paving. The crystallisation test results show the stone to be Class A which BRE Report 141 suggest is suitable for all uses and that it should have good resistance to both salt and frost. Based on current research it seems likely that the stone would

weather at a rate of between 1 and 2 mm per 100 years but it could be greater in severe exposures or on the edges of stonework. The strength is at the top end of the range for limestones.

Test Results – Spangle Purbeck Limestone (St.Aldhelm's Quarry)

Safety in Use		
Slip Resistance (Note 1)	52	Values > 40 are considered safe.
Abrasion Resistance (Note 1)	25.4	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression(Note 2)	98.2 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending (Note 1)	11.5 MPa	Loaded perpendicular to the bedding plane ambient humidity

	N.D.	Loaded parallel to the bedding plane ambient humidity
Porosity and Water Absorption		
1) Porosity (Note 3)	7.9%	
2) Saturation Coefficient (Note 3)	0.77	
3) Water Absorption	2.43 % (by wt)	
4) Bulk specific gravity	2498kg/m^3	
Resistance to Frost		
Freeze/Thaw Test (Note 1)	N.D.	
Resistance to Salt		
Sodium Sulphate Crystallisation Test (Note 3)	-0.46% Mean wt loss	

(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