



Portland Hard Blue Limestone

Technical Data Sheet

Portland Hard Blue Limestone

Bowers Quarry, Isle of Portland

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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 September 1997 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 Albion Stone Quarries Ltd and does not represent an endorsement of the stone by BRE.

General

The quarry is situated off Wide Street in Easton on the Isle of Portland. The quarry also produces Whit Bed and Base Bed.

Petrography

The stone is a dense limestone from the Purbeck Limestone Beds that form the upper part of the Portlandian formation (Jurassic) on the Isle of Portland.

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 the Portland Hard Blue Bed is a very new product but the results suggest it is very durable and is comparable with Whitbed. It is difficult to compare the results for the Hard Blue Stone from Bowers Quarry to those collected from buildings and exposure trials as the stone has not been used in building construction. However, the overall test results suggest that the stone is strong and of good durability. The crystallisation test results show the stone to be Class A which BRE Report 141 suggests that it is suitable for all uses. When using Hard Blue for flooring care would be needed if the surface were wet as the stone is slippery when wet. The abrasion results indicate that the stone would be hard wearing even in heavily trafficked areas.

Test Results – Portland Hard Blue Limestone

Safety in Use		
Slip Resistance ^(Note 1)	Wet: 36	Values > 40 are considered safe
	Dry: 57	
Abrasion Resistance ^(Note 1)	23.0	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	119 Mpa	Loaded perpendicular to the bedding – ambient humidity
2) Bending ^(Note 1)	13.8 Mpa	Loaded perpendicular to the bedding – ambient humidity
Porosity and Water Absorption		
1) Porosity ^(Note 3)	3.4%	

2) Saturation Coefficient <small>(Note 3)</small>	0.95	
3) Water Absorption	1.3% (by wt)	
4) Bulk specific gravity	2596 kg/m ³	
Resistance to Frost		
Freeze/Thaw Test <small>(Note 1)</small>	Not determined	
Resistance to Salt		
Sodium Sulphate Crystallisation Test <small>(Note 14)</small>	Mean: 0.0	

(Test methods Note 1 = prEn1341, Note 2 = prEN 1342, Note 3 = prEN 1341 /BRE 141, Note 4 = BRE 141)

All tests were carried out at BRE in July 1996)