



Portland Roach Limestone

Technical Data Sheet

Portland Roach Limestone

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

General

The quarry is situated near to Independence Quarry, Easton on the Isle of Portland. The Roach Bed is an extremely shelly stone from the bed that lies above the Whit Bed.

Petrography

The stone is an open textured oolitic limestone from the Portlandian formation (Jurassic). The stone is formed from ooliths in a micrite (fine grained calcium carbonate) matrix. It is an extremely shelly stone with a large number of holes scattered throughout it. The holes are due to the removal of fossil shells by percolating rain. The finer-grained parts of the stone is very similar to Whitbed.

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 Roach Bed is traditionally acknowledged as being very durable and is comparable with Whitbed. It has been used in extreme environments, for example coastal walls.

It is difficult to compare the results for the Roach Bed Stone from Bowers Quarry to those collected from buildings and exposure trials as the stone has been little used in building construction. However, the overall test results suggest that the stone compares well with the traditional view of Portland Whit Bed. Previous research at BRE has shown that Portland limestone which has a low saturation coefficient (>0.72) will have good weathering resistance when used on buildings.

The crystallisation test results show the stone to be Class B which BRE Report 141 suggests that it is suitable for most uses. 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.

Test Results – Portland Roach Limestone

Safety in Use		
Slip Resistance (Note 1)	Wet: 85	Values > 40 are considered safe
Abrasion Resistance ^(Note 1)	22.5	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	52 Mpa	Loaded perpendicular to the bedding – ambient humidity

2) Bending ^(Note 1)	7.1 Mpa	Loaded perpendicular to the bedding – ambient humidity
Porosity and Water Absorption		
1) Porosity ^(Note 3)	18.2%	
2) Saturation Coefficient ^(Note 3)	0.62	
3) Water Absorption	5.2% (by wt)	
4) Bulk specific gravity	2212 kg/m ³	
Resistance to Frost		
Freeze/Thaw Test ^(Note 1)	Not determined	
Resistance to Salt		
Sodium Sulphate Crystallisation Test ^(Note 4)	Mean: 3.3%	

(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