



Combe Down, Bath Stone

Technical Data Sheet

Combe Down, Bath Stone

John Hancock & Sons (Bath) Ltd
Upper Lawn Quarry, Combe Down, Bath.
Contact: John Hancock & Sons
Tel. 01225 833 37
Grid Reference: ST 766 624
Compiled December 1999

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 1999 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 John Hancock & Sons (Bath) Ltd and does not represent an endorsement of the stone by BRE.

General

The quarry is off Shaft Road in Combe Down village. The entrance is on the right before the entrance to Mount Pleasant Quarry. It has been worked since 1850. In the past there were seven or eight mines and one open quarry. Available reserves are in excess of 30,000m³. The maximum blocks size at the quarry is 1800mm x 1800mm by 600mm height on bed with the largest sawn slab size as 1200mm x 450mm x 600mm height on bed. There are several beds of stone of varying coarseness but it is difficult to tell the difference between them.

Petrography

The stone is an oolitic limestone and the beds are part of the Great Oolite of middle Jurassic age. It is a buff, shelly limestone and has characteristic veins running perpendicular to the bedding.

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 Bath area is traditionally used as building stone in the region and increasingly in many other towns and cities in the UK. The high water absorption and porosity indicate a very open stone that should have good resistance to weathering. The sodium sulphate crystallisation result indicates that the stone will have moderate resistance to salt damage and that it will perform well in all but the most exposed locations where it may require

some extra protection or careful design and detailing to shed water. The strength is towards the lower end of the range for limestones but the performance should be satisfactory if the relevant British Standards are followed.

The abrasion resistance is low and so the stone should only be used in lightly trafficked areas.

Test Results – Upper Lawn Bath Limestone

Safety in Use		
Slip Resistance ^(Note 1)	73	Values > 40 are considered safe.
Abrasion Resistance ^(Note 1)	33	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	16.4 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending ^(Note 1)	3.5 MPa	Loaded perpendicular to the bedding plane ambient humidity

	4.6 MPa	Loaded parallel to the bedding plane ambient humidity
Porosity and Water Absorption		
1) Porosity ^(Note 3)	27.2%	
2) Saturation Coefficient ^(Note 3)	0.58	
3) Water Absorption	8.03 % (by wt)	
4) Bulk specific gravity	1982kg/m ³	
Resistance to Frost		
Freeze/Thaw Test ^(Note 1)	N.D.	
Resistance to Salt		
Sodium Sulphate Crystallisation Test ^(Note 3)	20.14% 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