



Monks Park Limestone

Technical Data Sheet

Monks Park Limestone

Monks Park Mine, Corsham, Wilts

Compiled September 1997

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

General

The Monks Park mine is off the B3353 in Wiltshire. The stone is mined 24m below ground in a vast mine which extends for more than 15 hectares. There are plenty of reserves of stone. The stone is worked in galleries about 6m high which are supported by stone left untouched to act as props.

Petrography

Monks Park Stone is an oolitic limestone from the Great Oolite of middle Jurassic age. It is a fine-grained, buff coloured stone. The stone appears to be divided into four or more beds but all produce stone of the same colour and quality. In earlier work, three beds were tested but had similar porosity and water absorption values.

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 Monks Park is traditionally acknowledged as being less durable than stones such as Portland Whit Bed but it has been used extensively where a faster rate of weathering is acceptable or where its working qualities were required.

Where more severe exposure conditions are expected, for example high concentrations of sulphur dioxide or severe frosts, or where a long life is required then it may be desirable to use a more durable stone (e.g. Portland Whitbed) for weatherings. When using Monks Park Stone it is especially important that the detailing of the stonework is designed to offer the maximum protection to rainwater and rainwater runoff. Based on current research it seems

likely that the stone would weather at a rate of between 3 and 4 mm per 100 years but it could be greater in severe exposures or on the edges of stonework.

Test Results – Monks Park Limestone

Safety in Use		
Slip Resistance ^(Note 1)	83	Values > 40 are considered safe
Abrasion Resistance ^(Note 1)	33.1	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	29.3 MPa	Loaded perpendicular to the bedding – ambient humidity
2) Bending ^(Note 1)	4.6 MPa	Loaded perpendicular to the bedding – ambient humidity
Porosity and Water Absorption		
1) Porosity ^(Note 3)	23.8%	

2) Saturation Coefficient ^(Note 3)	0.85	
3) Water Absorption	10.3% (by wt)	
4) Bulk specific gravity	2066 kg/m ³	
Resistance to Frost		
Freeze/Thaw Test ^(Note 1)	Not determined	
Resistance to Salt		
Sodium Sulphate Crystallisation Test ^(Note 3)	Mean: 79% wt loss	

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

Tests were carried out at BRE in 1996