



# ／ Doultling Stone

## Technical Data Sheet

### Doulting Stone

The Doulting Stone Quarry

Chelynych Road, Doulting, Shepton Mallet, Somerset, BA4 4PZ.

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Grid Reference: ST 648 436

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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 January 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 The Doulting Stone Quarry and does not represent an endorsement of the stone by BRE.

### General

The quarry is located at the village of Doulting on the A361 near Shepton Mallett. There are a number of old quarries nearby like Brambleditch and Chelynych and the stone has been worked since Roman times. Two separate faces are being worked at present. Available reserves are in excess of 100,000m<sup>3</sup> with permission to extract stone for the next 40 years. The maximum blocks size at the quarry is 1000mm x 2500mm by 1800mm height on bed with the largest sawn size as 900mm x 2000mm x 1500mm height on bed. There are several beds of stone within each face.

### Petrography

The stone is from the Inferior Oolite of middle Jurassic age. Unlike the stone extracted centuries ago, the currently available is rarely oolitic. It is composed of fragments of older Carboniferous (or perhaps Liassic) limestones which were eroded and later re-deposited, resulting in a crystalline and coarsely granular appearance. This distinguishes Doulting Stone from other Jurassic limestones. It is creamy-brown or grey in colour with a regular and uniform texture.

### 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 Doulting 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 but it seems that the usual structure can result in some variability. The sodium sulphate crystallisation result indicates that the stone will usually 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. However, some appears to have very good resistance to salt damage. 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 – Doulting Limestone

<b>Safety in Use</b>		
Slip Resistance <sup>(Note 1)</sup>	N.D.	Values > 40 are considered safe
Abrasion Resistance <sup>(Note 1)</sup>	33	Values <23.0 are considered suitable for use in heavily trafficked areas
<b>Strength under load</b>		
1) Compression <sup>(Note 2)</sup>	12.6 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending <sup>(Note 1)</sup>	2.3 MPa	Loaded perpendicular to the bedding plane ambient humidity

	N.D.	Loaded parallel to the bedding plane ambient humidity	
<b>Porosity and Water Absorption</b>			
	Doulting 1997	Doulting South 1999	Doulting Wood 1999
1) Porosity <sup>(Note 3)</sup>	22.4%	19.02%	22.71%
2) Saturation Coefficient <sup>(Note 3)</sup>	0.74	0.70	0.78
3) Water Absorption	7.96% (by wt)	6.10% (by wt)	8.50% (by wt)
4) Bulk specific gravity	2091kg/m <sup>3</sup>	2185kg/m <sup>3</sup>	2097kg/m <sup>3</sup>
<b>Resistance to Frost</b>			
Freeze/Thaw Test <sup>(Note 1)</sup>	N.D.	N.D.	N.D.
<b>Resistance to Salt</b>			

Sodium Sulphate Crystallisation Test (Note 3)	47.01% Mean wt loss	1.77% Mean wt loss	20.78% Mean wt loss
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(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