

## JORDANS BASEBED

This technical data sheet was compiled by the Building Research Establishment (BRE) at the request of Albion Stone and is updated by Albion Stone to incorporate current test results. The 866 tests have been carried out in accordance with current European standards by the BRE on Albion Stone's behalf, or by other accredited testing houses. The early test data that pre-dates the introduction of Euro-codes has been included providing the test methods were very similar. The work carried out by the BRE on this technical data sheet has been undertaken as a paid commission and does not represent an endorsement of the stone by the BRE.

This data includes the Lowest and Highest Expected Values (LEV & HEV) using the statistical calculations from the Euro-codes. We are confident that these results give a good indication of the stones value, but as it is a natural material we, like other stone producers, are unable to guarantee individual results for specific stones. Instead, we recommend that an appropriate factor of safety is used to ensure satisfactory performance, Cladding Annex 1 of the Technical Manual provides further information, but we suggest that a suitably qualified stone consultant with geological and testing experience is employed to provide further information.

### Petrography

The stone was classified as well as sorted, moderately compacted, clast supported Oosparite Limestone. The clasts were predominantly composed of ooliths, but the mollusc shell fragments and quartz were also present. The matrix was composed of sparitic carbonate and some micritic carbonate. There was a moderate abundance of open voidage space. There was some evidence of sedimentary bedding by the preferred alignment of elongate clasts.

(For a full Petrographic description of this stone, please contact us on 01737 771772 or email [enquiries@albionstone.com](mailto:enquiries@albionstone.com))

### Strength

#### Compression - BS EN 1926

Lowest Expected Value 28.49 Mpa

Highest Expected Value 57.63 Mpa

Average: 41.15 Mpa from 26 tests

#### Flexural Strength - BS EN 13161

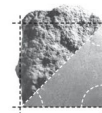
Lowest Expected Value 3.68 Mpa

Highest Expected Value 8.21 Mpa

Average: 6.78 Mpa from 86 tests

#### Breaking Load at Dowel Hole - BS EN 13364:2002

(See overleaf)



Specimen Thickness (mm)	Mean Breaking Load (N)	Lowest Expected Value (N) / Highest Expected Value (N)
30	618	504 / 749
40	1138	846 / 1499
50	1637	1282 / 8049
60	2174	1599 / 2652
75	4667	3795 / 4888

### Durability

#### Water Absorption - BS EN 13755

Lowest Expected Value 5.97%

Highest Expected Value 6.87%

**Average: 6.40% from 6 tests**

#### Density - BS EN 1936

Lowest Expected Value 2,122 kg/m<sup>3</sup>

Highest Expected Value 2,236 kg/m<sup>3</sup>

**Average: 2,178 kg/m<sup>3</sup> from 12 tests**

#### Porosity - BS EN 1936

Lowest Expected Value 17.59%

Highest Expected Value 20.67%

**Average: 19.08% from 16 tests**

#### Saturation Coefficient - BS EN 1936

Lowest Expected Value 0.71

Highest Expected Value 0.76

**Average: 0.73 from 10 tests**

#### Salt Crystallisation - BS EN 12370

Lowest Expected Value 15.34%

Highest Expected Value 70.82%

**Average: 34.63% from 6 tests**

### Flooring / Paving

Some of these flooring / paving results are not from the Jordans Quarry but the nearby Independent Quarry, but the stones from the two sites are very similar and only Easton Lane separates the sites and at their closest point are only metres away from each other.

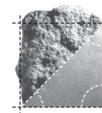
#### Abrasion Resistance - EN14157

Lowest Expected Value 20

Highest Expected Value 29

**Average 25 from 18 tests**

portland stone - naturally



### **Slip Resistance - TRRL Pendulum Test: Grit 120 (Flooring)**

Lowest Expected Value 71

Highest Expected Value 86

**Wet Average value 78 from 72 tests**

Lowest Expected Value 86

Highest Expected Value 95

**Dry Average value 91 from 24 tests**

### **Freeze/Thaw - BS EN 13161**

48 Freeze/Thaw Cycles

Mean Value 6.49 Mpa

4.3% reduction in strength

**Pass**

### **Technical Summary**

**Prepared by: Dr T Yates, BRE (Building Research Establishment)**

#### **Durability and Weathering**

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 Basebed is traditionally acknowledged as being less durable than Whitbed but it has been used extensively where a faster rate of weathering is acceptable or where its working qualities were required. It is possible to compare the results for the Basebed Stone from Jordans Quarry to those collected from buildings, exposure trials and tests on quarry samples collected by BRE during the last 70 years. This shows that the stone compares well with the traditional view of Portland Basebed. Previous research at BRE has shown that Portland limestone which has a low saturation coefficient (>0.72), a high microporosity (>11.0 of the stone by volume) and an increased amount of micritic matrix will weather more rapidly than Whitbed when used on buildings. The results summarised on these sheets show that most of the samples tested are of this type. The crystallisation test results show the stone to be Class D -E which BRE Report 141 suggests that it is suitable for plain walling and cladding. The results from the other tests suggest that soundest stone may well perform better than this class in the current environment. Where more severe exposure conditions are expected, for example high concentrations of sulphur dioxide or severe frosts, or where a long life is required (for example >50 years) then it may be desirable to use a more durable stone (e.g. Jordans Whitbed). When using Jordans Basebed 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.**

(Weathering rates are based on the BRE interpretation of historical data dating from 1932).