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)

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 3.92 MPa
Highest Expected Value 8.20 MPa
Average: 6.85 MPa from 96 tests

Flexural Strength - BS EN 12372 (Pre-thermal testing)
Lowest Expected Value 7.04 MPa
Highest Expected Value 10.63 MPa
Average: 8.69 MPa from 10 tests

Flexural Strength - BS EN 12372 (After 20 cycles - BS EN 14066)
Lowest Expected Value 9.59 MPa
Highest Expected Value 11.73 MPa
Average: 10.62 MPa from 10 tests

Breaking Load at Dowel Hole - BS EN 13364:2002

Specimen Thickness (mm)	Mean Breaking Load (N)	Lowest Expected Value (N) / Highest Expected Value (N)
75	4329	3795 / 4888
60	2074	1576 / 2689
50	1637	1276 / 2075
40	1138	825 / 1537
30	618	496 / 762

Determination of Load Capacity of FZP-Anchors (Fischer under cut Anchors) - pull out testing on 50mm thick
Lowest Expected Value 3853 N
Highest Expected Value 5093 N
Average: 4440 N from 10 tests

Durability

Water Absorption - BS EN 13755
Lowest Expected Value 6.10%
Highest Expected Value 7.69%
Average: 6.86% from 18 tests

Density - BS EN 1936
Lowest Expected Value 2,133 kg/m³
Highest Expected Value 2,218 kg/m³
Average: 2,175 kg/m³ from 25 tests

Porosity - BS EN 1936
Lowest Expected Value 17.39%
Highest Expected Value 20.32%
Average: 18.81% from 34 tests

Saturation Coefficient - BS EN 1936
Lowest Expected Value 0.69
Highest Expected Value 0.92
Average: 0.76 from 16 tests

Thermal Shock Resistance - BS EN 14066
Lowest Expected Value 0.00%
Highest Expected Value 13.0%
Average: 1.94% from 10 tests

Water Absorption by Capillarity - BS EN 1925
42.66g/m².sec^{-2}

Salt Crystallisation - BS EN 12370
Lowest Expected Value 15.34%
Highest Expected Value 70.82%
Average: 34.63% from 6 tests

Flooring / Paving

Abrasion Resistance - EN 14157
Lowest Expected Value 24
Highest Expected Value 28
Average 26 from 6 tests

Slip Resistance - BS EN 1341 TRRL Pendulum Test: Grit 120 (Flooring)
Lowest Expected Value 63
Highest Expected Value 75
Wet Average value 68.8 from 12 tests
Lowest Expected Value 79
Highest Expected Value 88
Dry Average value 83 from 12 tests

Freeze/Thaw – BS EN 13161
48 Freeze/Thaw Cycles
Mean Value 6.49 MPa
4.3% reduction in strength
Pass

Light Reflectance - tested using NCL Colour Scan instrument - Grit 120
Mean Value 62.2

Internal Flooring
Jordans Basebed is suitable for all flooring applications up to semi-intensive use such as shops and offices with estimated visitor numbers of 5,000,000 with a service life without significant wear of 20 years. The slip resistance results of over 40 demonstrate that the stone will be safe in all applications

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).