FANCY BEACH WHITBED

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 a moderately sorted, moderately compacted, clast supported Oosparite Limestone. The clasts were predominantly composed of ooliths, but mollusc shell and echinoderm fragments and quartz were also present. The matrix was composed of sparitic syntaxial carbonate and some micritic carbonate. There was a moderate to high abundance of open voidage space. There was possibly 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 35.53 MPa
Highest Expected Value 61.06 MPa
Average: 47.04 Mpa from 26 tests

Flexural Strength - BS EN 13161
Lowest Expected Value 2.47 MPa
Highest Expected Value 8.13 MPa
Average: 6.03 MPa from 82 tests

Flexural Strength - BS EN 12372 (Pre-thermal testing)
Lowest Expected Value 3.83 MPa
Highest Expected Value 6.15 MPa
Average: 4.88 MPa from 10 tests

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Flexural Strength - BS EN 12372 (After 20 cycles - BS EN 14066)
Lowest Expected Value 4.04 MPa
Highest Expected Value 7.11 MPa
Average: 5.40 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	4667	3749 / 5668
60	2249	1777 / 2816
50	1860	1460 / 2342
40	1191	922 / 1519
30	667	539 / 817

Durability

Water Absorption - BS EN 13755
Lowest Expected Value 3.54%
Highest Expected Value 10.30%
Average: 6.29% from 49 tests

Density - BS EN 1936
Lowest Expected Value 2,002 kg/m³
Highest Expected Value 2,315 kg/m³
Average: 2,155 kg/m³ from 60 tests

Porosity - BS EN 1936
Lowest Expected Value 13.88%
Highest Expected Value 25.79%
Average: 19.24% from 83 tests

Saturation Coefficient - BS EN 1936
Lowest Expected Value 0.56
Highest Expected Value 0.92
Average: 0.73 from 22 tests

Salt Crystallisation – BS EN 12370
Lowest Expected Value 0.00%
Highest Expected Value 6.14%
Average: 2.05% from 6 tests

Thermal Shock Resistance—BS EN 14066
% change in elastic modulus
Lowest Expected Value 0%
Highest Expected Value 32%
Average: 4.51% from 10 tests

Water Absorption by Capillarity - BS EN 1925
59.41g/m².sec^{-2}

Flooring / Paving

Abrasion Resistance - EN 14157
Lowest Expected Value 20.55
Highest Expected Value 28.99
Average: 24.48 from 9 tests

Slip Resistance - TRRL Pendulum Test: Grit 120 (Flooring)
Lowest Expected Value 68
Highest Expected Value 84
Wet Average value 76 from 24 tests
Lowest Expected Value 79
Highest Expected Value 97
Dry Average value 88 from 24 tests

Freeze/Thaw – BS EN 13161
48 Freeze/Thaw Cycles
Mean Value 5.04 MPa
0% reduction in strength
Pass

Internal Flooring

Fancy Beach Whitbed 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 Whitbed is traditionally acknowledged as generally being a very durable building stone and it has been used extensively in many towns and cities in the UK. Comparing the results for the Whitbed Stone from Jordans Quarry to those collected from buildings, exposure trials and tests on quarry

samples collected by BRE during the last 70 years shows that this stone compares very well with the traditional view of Portland Whitbed. Previous research at BRE has shown that Portland limestone which has a low saturation coefficient (<0.72), a low microporosity (<11.0 of the stone by volume) and an open oolitic structure generally performs well over long periods when used on buildings. The results summarised on these sheets show that the limited number of samples tested meet these criteria. The average crystallisation test results show the stone to be Class C which BRE Report 141 suggests is suitable for most uses including where exposure conditions are to be more severe, for example high concentrations of sulphur dioxide or severe frosts, or where a long life is required (for example >50 years). In all cases it is important that the detailing of the stonework is designed to offer the maximum protection from rainwater and rainwater runoff.

Based on current research it seems likely that the stone would weather at a rate of between 1 and 2 mm per 100 years but it could be greater in severe exposures.

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