



— Cotswold Hill
Quarry Cream
(Bed 1) - BRE
Group

Technical Data Sheet

Cotswold Hill Quarry Cream (Bed 1)

Cotswold Hill Stone Ltd

Cotswold Hill Quarry, Ford, Cheltenham, Glos.

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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 September 1999 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 Cotswold Hill Quarry and does not represent an endorsement of the stone by BRE.

General

The quarry is at Ford which is north-west of Stow-on-the-Wold on the B4077, The quarry has been in production since 1981 but there are many old workings nearby. The overall depth of the face is 24m. There is a large amount of overburden within which is a creamy coloured bed of walling stone. There are then five beds of building stone of which only the middle three are supplied. Available reserves are in excess of 1500m³. The maximum blocks size at the quarry is 2000mm x 1500mm by 900mm height on bed with the largest sawn slab size as 2000mm x 610mm x 900mm height on bed.

Petrography

The stone is an oolitic limestone and the beds are part of the Inferior Oolite of middle Jurassic age.

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 Cotswold region 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 saturation co-efficient indicate a stone that will have limited resistance to weathering. The sodium sulphate crystallisation result also indicates that the stone will have limited resistance to salt damage .

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 for weatherings. When using Bed 1 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.

The abrasion resistance is low and so the stone should be used in lightly trafficked areas.

Test Results – Cotswold Hill Cream (Bed 1)

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| Safety in Use | | |
| Slip Resistance ^(Note 1) | N.D. | Values > 40 are considered safe |
| Abrasion Resistance ^(Note 1) | 38.04 | Values <23.0 are considered suitable for use in heavily trafficked areas |
| Strength under load | | |
| 1) Compression ^(Note 2) | 36.6 MPa | Loaded perpendicular to the bedding plane ambient humidity |

| | | |
|---|-----------------------|--|
| 2) Bending ^(Note 1) | 5.4 MPa | Loaded perpendicular to the bedding plane ambient humidity |
| | 4.9 MPa | Loaded parallel to the bedding plane ambient humidity |
| Porosity and Water Absorption | | |
| 1) Porosity ^(Note 3) | 20.6% | |
| 2) Saturation Coefficient ^(Note 3) | 0.89 | |
| 3) Water Absorption | 8.5% (by wt) | |
| 4) Bulk specific gravity | 2158kg/m ³ | |
| Resistance to Frost | | |
| Freeze/Thaw Test ^(Note 1) | N.D. | |
| Resistance to Salt | | |

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|---|------------------------|--|
| Sodium Sulphate Crystallisation Test (Note 3) | 91.58% Mean wt loss | |
|---|------------------------|--|

(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