



Orton Scar Limestone

Technical Data Sheet

Orton Scar Limestone

Orton Quarry, near Penrith

Compiled September 1997

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 1997 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 and Cumbria Stone Quarries Ltd and does not represent an endorsement of the stone by BRE.

General

The quarry is to the north-east of the village of Orton off the B6260 and to the east of Orton Scar. There are areas nearby for future work.

Petrography

Orton Scar Stone is fine grained stone of early Carboniferous age. It is dense and easily takes a polish. There are three beds of stone under approximately 1.2m of overburden. The top bed is thin and not always usable. The other two beds are similar to each other. There is some colour variation in the stone with a range of grey/brown shades. The average depth of stone on bed is 230mm.

Expected Durability and Performance

It is important that the results from the from individual tests are not viewed in isolation. They should be considered together and compared to the performance of the stone in existing buildings and other uses. Dense Carboniferous limestones are traditionally acknowledged as generally being a very durable building and paving stone and have been used extensively in many towns and cities in the UK. Orton Scar limestone appears to be a durable stone that will have good resistance to acid rain or air pollution. In addition, the low weight lost in the sodium sulphate crystallisation test indicates good resistance to salt damage (for example in coastal locations or from de-icing salts); the stone should also have good frost resistance. The compressive strength of the stone is high for a limestone and is comparable with many sandstones. The high density and compressive strength indicate that the stone should be suitable for use in heavily trafficked areas.

Overall, should be suitable for use in most aspects of construction including flooring, paving, load bearing masonry and cladding including areas where a long service life is needed.

Test Results- Orton Scar Limestone

Safety in Use		
Slip Resistance ^(Note 1)	Not Determined	Values > 40 are considered safe
Abrasion Resistance ^(Note 1)	Not Determined	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression ^(Note 2)	95 MPa	Conditions of testing not known
2) Bending ^(Note 1)	Not Determined	Loaded perpendicular to the bedding ambient humidity
Porosity and Water Absorption		
1) Porosity ^(Note 3)	0.9 – 2.9%	
2) Saturation Coefficient ^(Note 3)	0.69 – 0.80	

3) Water Absorption	0.35% (by wt)	
4) Bulk specific gravity	2675 kg/m ³	
Resistance to Frost		
Freeze/Thaw Test ^(Note 1)	Not Determined	
Resistance to Salt		
Sodium Sulphate Crystallisation Test ^(Note)	Mean: 0%	

(Test methods Note 1 = prEn1341, Note 2 = prEN 1342, Note 3 = prEn 1341 /BRE 141, Note 4 = BRE 141)

Tests were carried out at BRE in 1997, data from earlier surveys has been included)