Totternhoe Limestone

Technical Data Sheet
Totternhoe Limestone
H.G. Clarke and Son
The Original Totternhoe Clunch, Quarry, Lower End,
Totternhoe, Beds
Contact : H.G. Clarke and Son
Tel. 01234 711 358 Fax. 01234 712 047
Grid Reference: SP 976 224
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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 H.G. Clarke and Son and does not represent an endorsement of the stone by BRE.

General
The quarry is on the northern edge of the village of Totternhoe, which is just off the B489, 1 mile west of Dunstable, The quarry is vast with building stone being extracted from one small part with the rest being crushed for lime production. The overburden is 9-15m deep and the overall height of the worked face is around 5m. The maximum blocks size at the quarry is upto1800mm height on bed.

Petrography
The stone is a chalk from the Lower Chalk of Cretaceous age. It is a greyish white colour often with a greenish tinge. The latter is due to the presence of glauconite, the potassium andiron aluminium silicate mineral also found in Kentish Ragstone. The stone has a gritty texture due to the presence of shell fragments. The stone from the bottom of the face is considered to be harder and more durable.

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 Totternhoe has traditionally been used ashlar and as moulded work. The high porosity and high water absorption indicate a stone that will have limited resistance to weathering. The sodium sulphate crystallisation result also indicates that the stone will have little resistance to salt damage. In practice, it has been found that performance relates very much to the way the

stone has been extracted, seasoned, and laid in the building. Some stone has been known to acquire a remarkable toughness after weathering.

Test Results – Totternhoe

Safety in Use		
Slip Resistance (Note 1)	N.D.	Values > 40 are considered safe.
Abrasion Resistance (Note 1)	N.D.	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression(Note 2)	29.8 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending (Note 1)	4.6 MPa	Loaded perpendicular to the bedding plane ambient humidity

	N.D.	Loaded parallel to the bedding plane ambient humidity
Porosity and Water Absorption		
1) Porosity (Note 3)	31.4%	
2) Saturation Coefficient (Note 3)	0.84	
3) Water Absorption	14.0 % (by wt)	
4) Bulk specific gravity	1876kg/m^3	
Resistance to Frost		
Freeze/Thaw Test (Note 1)	N.D.	
Resistance to Salt		
Sodium Sulphate Crystallisation Test (Note 3)	100% 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