Ancaster Limestone – Hard White

Technical Data Sheet
Ancaster Limestone – Hard White

Rare Stone Group
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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 the Rare Stone Group and does not represent an endorsement of the stone by BRE.

General
The quarry is south of the village of Ancaster off the B6403 on the road to Wilsford and Barkston Heath Airfield (GR SK 991 407). The stone was worked by both the Romans and the Saxons. The present quarry, which is surrounded by old working, has been worked since around 1957. There are reserves of over 250,000 tonnes.

Petrography
Ancaster Stone is an oolitic limestone from the Lincolnshire Limestone formation of middle Jurassic age. Traditionally, three beds of stone have been worked from beneath around 8m of overburden – the Weather Bed, Hard White and Freestone. The Freestone was not included in the current project.

The Hard White is a creamy coloured stone of uniform texture with very little shell. The depth of this bed is around 3.0m with individual quarry blocks around 2000mm x 1000mm x 500mm on bed.

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 Ancaster has been used for many years in a wide range of locations. The high saturation coefficient indicates 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 is likely that performance will relate very much to the way the stone has been laid in the building.

When using Ancaster Hard White Limestone 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.

Test Results – Ancaster limestone-Hard White

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)	N.D. MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending (Note 1)	N.D. MPa	Loaded perpendicular to the

		bedding plane ambient humidity
	N.D. MPa	Loaded parallel to the bedding plane ambient humidity
Porosity and Water Absorption		
1) Porosity (Note 3 and 5)	14.0%	
2) Saturation Coefficient (Note 3)	0.94	
3) Water Absorption	N.D. % (by wt)	
4) Bulk specific gravity	2200kg/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, Note 5 = based on earlier BRE data)

Tests were carried out at BRE in 1997. N.D. = not determined