

# Technical Data Sheet

## Cat Castle Sandstone (Buff)

### General

The stone has been quarried in the Barnard Castle area since before the turn of the century. There are old quarries nearby which were owned by the railways and which provided stone for many of the railway bridges north of York. This particular quarry was closed in 1914 and reopened in 1977. The stone is marketed as Cat Castle Grey and Cat Castle Buff. There are good reserves of stone. The stone is extracted from a 4.5m face beneath 2m of overburden. There is thought to be further stone below the present floor of the quarry. The stone is available at various depths on bed and large blocks are obtainable.

### Petrography

Cat Castle is from the Coal Measures of Carboniferous age. It is an attractive coarse to very coarse grained stone, creamy buff in colour with darker specks though some blocks are grey in colour.

### Expected Durability and Performance

It is important that the results from the 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. Sandstone from the Coal Measures have been used extensively in many towns and cities in the UK. Cat Castle has a long history of use for buildings and civil engineering projects. Cat Castle sandstone appears to be a durable stone that is not effected by acid rain or air pollution. The weight loss in the sodium sulphate crystallisation test indicates resistance to salt damage but the high weight loss in the harsher saturated sodium sulphate test indicates susceptibility to salt damage in harsh environments (for example in coastal locations or from de-icing salts). Previous tests using the saturated sodium sulphate crystallisation test indicate that some caution is needed if the stone is to be exposed to a very harsh environment for a long period. In the frost test there is a slight loss in flexural strength with the Buff. However, the stones traditional use in the north of England and Scotland, including harbour walls, indicates good performance. The compressive and flexural strength of the stone is towards the lower end of the range for sandstone but is similar to some of the stronger limestones.

Overall, Dunhouse Buff should be suitable for use in most aspects of construction including load bearing masonry and cladding but special consideration may be required where extreme conditions are likely to be encountered.

### Test Results - Catcastle - Buff

Safety in Use		
Slip Resistance <sup>(Note 1)</sup>	76	Wet Values > 40 are considered safe.
Abrasion Resistance <sup>(Note 1)</sup>	Not Tested	Values <23.0 are considered suitable for use in heavily trafficked areas
Strength under load		
1) Compression <sup>(Note 2)</sup>	115.5 MPa (94 - 115 Mpa range)	Loaded perpendicular to the bedding plane ambient humidity
2) Bending <sup>(Note 1)</sup>	6.7 MPa	Loaded perpendicular to the bedding plane ambient humidity
	Not Tested	Loaded perpendicular to the bedding plane ambient humidity

<b>Porosity and Water Absorption</b>		
1) Porosity <sup>(Note 3)</sup>	10.1% (10.1 - 11.8 range)	
2) Saturation Coefficient <sup>(Note 3)</sup>	0.62 (0.6 - 0.68 range)	
3) Water Absorption	2.6 % (by wt) (2.6 - 4.3 range)	
4) Bulk specific gravity	2386kg/m <sup>3</sup> (2350 - 2386 range)	
<b>Resistance to Frost</b>		
Flexural strength after Freeze/Thaw Test <sup>(Note 1)</sup>	5.2 MPa	Loaded perpendicular to the bedding plane ambient humidity
<b>Resistance to Salt</b>		
Sodium Sulphate Crystallisation Test <sup>(Note 3)</sup>	-0.95% Mean wt loss	
Sodium Sulphate Crystallisation Test <sup>(Note 14)</sup> (saturated)	Mean: 82% wt loss	
<b>Resistance to Acidity</b>		
Acid Immersion Test <sup>(Note 4)</sup>	Pass	

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