



# Spynie Sandstone

## Technical Data Sheet

### Spynie Sandstone

Spynie Quarry

Birnie, Elgin, Moray, IV30 8SW

Contact : Moray Stone Cutters

Tel. 01343 860244

Grid Reference : NJ 223 656

Compiled May 2000

This data sheet was compiled by the Building Research Establishment (BRE). It is based on data from current tests at BRE (2000). The data sheet was compiled in May 2000. 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 Moray Stone Cutters and does not represent an endorsement of the stone by BRE.

### General

The quarry is near Elgin, Moray. The stone is available at depths of 1.3 m on bed and up to 1.5 m long. It is known as 'liver rock' because it has no obvious bedding planes and it need not be laid on bed in a building.

### Petrography

The sandstone is a pale yellow buff, fine grained, calcareous sandstone from the New Red Sandstone of Triassic age.

### 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 is traditionally acknowledged as generally being a very durable building and paving stone and has been used extensively in many towns and cities in the UK. Spynie sandstone appears to be a durable stone that, on the basis of the acid test, may have limited resistance to acid rain or air pollution. However, it is known to have given good service in extensive applications in non-industrial location including railway bridges in northern Scotland. In addition, the negligible weight loss in the sodium sulphate crystallisation test indicates high resistance to salt damage (for example in coastal locations or from de-icing salts). From the frost test the stone should also have good frost resistance. The compressive strength of the stone is low for a sandstone but is comparable with many limestones. The compressive strength indicates that the stone should be suitable for use in light to moderately trafficked areas.

Overall, Spynie should be suitable for use in most aspects of construction including flooring, paving, load bearing masonry and cladding. Special consideration is required with regard to the reaction to acidic environments for areas where a long service life is needed. At present, the stone is not used for setts.

**Test Results – Spynie Sandstone**

<b>Safety in Use</b>		
Slip Resistance <sup>(Note 1)</sup>	82	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
<b>Strength under load</b>		
1) Compression <sup>(Note 2)</sup>	62.1 MPa	Loaded perpendicular to the bedding plane ambient humidity
2) Bending <sup>(Note 1)</sup>	9.4 MPa	Loaded perpendicular to the bedding plane ambient humidity

	Not tested	Loaded parallel to the bedding plane ambient humidity
<b>Porosity and Water Absorption</b>		
1) Porosity <sup>(Note 3)</sup>	13.3%	
2) Saturation Coefficient <sup>(Note 3)</sup>	0.53	
3) Water Absorption	3.1% (by wt)	
4) Bulk specific gravity	2290kg/m <sup>3</sup>	
<b>Resistance to Frost</b>		
Flexural strength after Freeze/Thaw Test <sup>(Note 1)</sup>	9.0 MPa	Loaded perpendicular to the bedding plane ambient humidity
<b>Resistance to Salt</b>		
Sodium Sulphate Crystallisation Test <sup>(Note 3)</sup>	-1.42% Mean wt loss	

Sodium Sulphate Crystallisation Test (Note 3) (Saturated)	18.0% Mean wt loss	
<b>Resistance to Acidity</b>		
Acid Immersion Test <sup>(Note 4)</sup>	Fail	

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

Tests were carried out at BRE in 2000