Physical Properties: Threecastles Blue Limestone
Mc Keon Stone Ltd - Threecastles Quarry , Kilkenny . Co ordinates 52.697 -7.322

PETROGRAPHICAL description of the Stone :
A compact bioclastic, crinoidical limestone with a rich fossil content of mainly shells from brachiopods and coral. Finely dispersed carbon through the stone mass results in a typical blue-grey colour.

Average chemical composition:
98% Calcite, 0.7% Dolomite, 0.7% Quarts, 0.2% organic Carbon, Less then 0.1% Iron Sulphite.

The Irish Blue Limestone from the Threecastles Quarry , Co Kilkenny in Ireland has been tested by a wide range of laboratories in a number of countries during the last 20 years and the latest test results are from July 2014. Over the years there is little variation in the periodic test results taken . Where certain properties of the stone are of paramount importance to a particular project, the various International Standards all recommend that accurate sampling and testing of the material to be used should be undertaken. In accordance with these principles, Mc Keon Stone Ltd will always facilitate the collection of representative samples which prospective customers may wish to test prior to use in major projects.

Test	Units	Minimum	Typical	Maximum
Apparent Density	Kg/m3	2680	2690	2690
Porosity	% Vol.	0.4	0.4	0.4
Frost Resistance			No Effect	
Capilliarity Coefficient	GC	-5.55	-6.8	-8.43
Thermal Expansion Coefficent	Mm/m.K	0.0051	0.0055	0.0058
Thermal Conductivity	W/Mk		2.5 to 3.1	
Compressive Strength	MPa	120	136	151
Flexural Strength	MPa	11.5	12.7	14.0
Ultrasonic Velocity	m/s	5180	5416	5785
Scratch Test	Mm		0.3	
Abrasion Resistance	Mm	18.1	18.5	19.4
Modulus of Elasticity	kN/mm2	74.85	75.24	75.97
Water Absorption	% Dry Mass	0.1	0.1	0.1
Sulphate Attack, SO2	Insensitive due to compact grain structure and extremely low iron composites content. No risk of brown discoloration and staining			
Sound Insulation	Dependent on homogenous mass, large blocks of Irish Blue Limestone off good sound attenuation.			

The standards used for the various tests are as follows:

Petrographic Examination	NBN EN 12407 : 2011
Apparent Density	NBN EN 1936: 2006
Porosity	NBN EN1936 : 2006
Frost Resistance	NBN EN 12371 : 2010
Capillarity Coefficient	NBN B05-201
Thermal Expansion Coefficient	Pr EN 14581: 2004
Compressive Strength	NBN EN 1926 : 1999
Flexural Strength	NBN EN 12372 :2006
Ultrasonic Velocity	NBN B15-229
Abrasion Resistance	EN 14157: 2004
Modulus of Elasticity	PR EN14146 : 2003
Water Absorption	NBN EN 13755 : 2008

The test protocols used to determine the physical properties have been given. If the values are to be used for design calculations it is important to confirm that the test cited is comparable with the relevant country standard.

Slip Resistance

Slip resistance tests were carried out using two slip measurement techniques , TRL as per NBN EN 1341:2012 and 4S and the results are shown below in Dry and Wet conditions. An Explanation of the values is shown in the tables below.

Finish	Dry TRL	Wet TRL	Dry 4S	Wet 4S
Sanded (C24)	68	51	70	60
Blue Honed 320 grit	59	19	50	30
Dark Honed 400 grit	54	10		
Honed P36	55	44		
Bushammered	91	75		
Flamed	92	83		

TRL Slip Resistance Values SRV

Safety Category	Dangerous	Marginal	Satisfactory	Excellent
TRL pendulum value	<19	20 - 39	40 - 74	>75

4S Slip Resistance Values

Potential for Slip	High	Moderate	Low	Extremely Low
4S pendulum value	< 25	25 - 35	35-65	> 65


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EUROPES BEST BLUE LIMESTONE