

# Material Data Sheet from supplier ...Kilkenny Limestone.

Test	Data	Standard
Petrographical Description	Grey , very fine to coarse grained bioclastic crinoidal LIMESTONE, well compacted with a rich fossil content of mainly shells from brachiopods and coral . The stone exhibited sparse styolitic seams running parallel to subparallel to the bedding plane . Relict bioclastic debris and crystal aggregations up to 6mm and commonly less than 3mm across.	EN 12407 :2011
Average Chemical Composition	98% Calcite , 0.7% Dolomite , 0.7% Quartz, 0.2% organic Carbon , less than 0.1% Iron Sulphite	
Flexural Strength	Average 12.7 MPa or N/mm <sup>2</sup> Minimum 11.5 MPa Maximum 14.0 MPa Standard deviation 1.5	NBN EN 12372 :2006
Frost Resistance	After 56 Freeze Thaw cycles , Average 12.7 MPa Standard Deviation 1.2	NBN EN 12371:2010 Test A
Compressive Strength	Average 136 MPa or N/mm <sup>2</sup> Standard deviation 12	NBN EN 1926 : 1999
Frost Resistance	After Freeze Thaw cycles , Average 129 MPa Standard deviation 6.1	NBN EN 12371:2010 Test A
Water Absorption	Average 0.1 % dry mass	NBN EN 13755 :2008
Apparent Density	Average 2690 Kg/m <sup>3</sup> Standard Deviation 3	NBN EN 1936 : 2006
Abrasion Resistance	Average 18.5 mm Standard Deviation 0.65	NBN EN 14157 : 2004
Open Porosity	Average 0.4 v % Standard Deviation 0.05	NBN EN 1936 : 2006
Capillarity Coefficient	Average -6.8 GC Minimum -5.55 Maximum -8.43	NBN B05-201

Thermal Expansion Coefficient	Average 0.0055 mm m-1K <sup>-1</sup> Standard Deviation 0.0003	Pr EN 14581:2004																																														
Thermal conductivity	2.5 to 3.1 W m-K <sup>-1</sup>																																															
Modulus of Elasticity	Average 75.25 kN/mm <sup>2</sup> Minimum 74.85 Maximum 75.97	PR EN 14146 : 2003																																														
Scratch Test	0.3 mm																																															
Ultrasonic Velocity	Average 5416 m/s Minimum 5180 Maximum 5785	NBN B15-229																																														
Slip Resistance	<p>Pendulum test TRL: <u>Average Slip Resistance Value</u> <u>Surface Roughness</u></p> <table border="1"> <thead> <tr> <th>Finish</th> <th>Dry</th> <th>Wet</th> <th>Rz ,<math>\mu</math>m</th> </tr> </thead> <tbody> <tr> <td>Flamed</td> <td>92</td> <td>83</td> <td>79.0</td> </tr> <tr> <td>Bushammered</td> <td>91</td> <td>75</td> <td>67.50</td> </tr> <tr> <td>P16 Diamond Blade</td> <td>61</td> <td>48</td> <td>21.25</td> </tr> <tr> <td>Sanded C24</td> <td>68</td> <td>51</td> <td>27.60</td> </tr> <tr> <td>Honed P36</td> <td>55</td> <td>44</td> <td>15.40</td> </tr> <tr> <td>Dark Honed 400 grit</td> <td>54</td> <td>10</td> <td>10.00</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>TRL Slip Resistance values</th> <th>Potential for Slip</th> </tr> </thead> <tbody> <tr> <td>&lt; 19</td> <td>High</td> </tr> <tr> <td>20- 39</td> <td>Moderate</td> </tr> <tr> <td>40- 74</td> <td>Low</td> </tr> <tr> <td>&gt; 75</td> <td>Extremely Low</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Rz, Micro Roughness Values</th> <th>Potential for Slip</th> </tr> </thead> <tbody> <tr> <td>&lt; 10 <math>\mu</math>m</td> <td>High</td> </tr> <tr> <td>10 - 20 <math>\mu</math>m</td> <td>Moderate</td> </tr> <tr> <td>20 <math>\mu</math>m +</td> <td>Low</td> </tr> </tbody> </table>	Finish	Dry	Wet	Rz , $\mu$ m	Flamed	92	83	79.0	Bushammered	91	75	67.50	P16 Diamond Blade	61	48	21.25	Sanded C24	68	51	27.60	Honed P36	55	44	15.40	Dark Honed 400 grit	54	10	10.00	TRL Slip Resistance values	Potential for Slip	< 19	High	20- 39	Moderate	40- 74	Low	> 75	Extremely Low	Rz, Micro Roughness Values	Potential for Slip	< 10 $\mu$ m	High	10 - 20 $\mu$ m	Moderate	20 $\mu$ m +	Low	NBN EN 1341:2012
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Sulphate attack , SO <sub>2</sub>	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																																															
Reaction to Fire	Class 1	Without Testing (refer to decision 86/603/EEC)																																														

