Klegecell R Grade Structural Foam

Klegecell R Grade offers cost-effective performance for most sandwich applications where there is a need for a lightweight core material. It offers good dimensional stability, outstanding strength to weight ratio, excellent moisture resistance and good thermal properties.

It is available in a particular wide variety of densities (30 to 400 Kg/m³) to enable designers, engineers and builders to choose the most appropriate material for the prevailing application.

Other Klegecell Grades

**Klegecell TR**
Specially formulated and processed for compatibility with high process temperature applications.

**Klegecell SR**
An intermediate product between the R and TR grades.

**Klegecell D**
Improved ductility makes the D grade suitable for use in dynamically loaded structures.

**Klegecell DS**
Combines the good properties of the D grade with improved thermal stability.

Approvals

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### Klegecell R Grade - Performance Characteristics

(average properties for the nominal density)

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Standard</th>
<th>Units</th>
<th>R30</th>
<th>R40</th>
<th>R45</th>
<th>R55</th>
<th>R65</th>
<th>R75</th>
<th>R90</th>
<th>R100</th>
<th>R130</th>
<th>R200</th>
<th>R260</th>
<th>R300</th>
<th>R400</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>ISO 845</td>
<td>Kg/m³</td>
<td>30</td>
<td>40</td>
<td>45</td>
<td>55</td>
<td>65</td>
<td>75</td>
<td>90</td>
<td>100</td>
<td>130</td>
<td>200</td>
<td>260</td>
<td>300</td>
<td>400</td>
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<tr>
<td>Compressive Strength</td>
<td>ISO 844</td>
<td>MPa</td>
<td>0.22</td>
<td>0.41</td>
<td>0.54</td>
<td>0.78</td>
<td>1.0</td>
<td>1.3</td>
<td>1.7</td>
<td>1.9</td>
<td>2.75</td>
<td>4.7</td>
<td>6.6</td>
<td>7.8</td>
<td>11</td>
<td>Perpendicular to the plane</td>
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<tr>
<td>Compressive Modulus</td>
<td>ASTM D 1621-73/B</td>
<td>MPa</td>
<td>26</td>
<td>46</td>
<td>60</td>
<td>77</td>
<td>84</td>
<td>109</td>
<td>140</td>
<td>160</td>
<td>250</td>
<td>440</td>
<td>600</td>
<td>700</td>
<td>1000</td>
<td>Perpendicular to the plane by extensometer</td>
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<tr>
<td>Compressive Strength</td>
<td>ASTM D 1621-73/B</td>
<td>MPa</td>
<td>12</td>
<td>20</td>
<td>25</td>
<td>35</td>
<td>46</td>
<td>56</td>
<td>73</td>
<td>84</td>
<td>118</td>
<td>205</td>
<td>286</td>
<td>344</td>
<td>501</td>
<td>Perpendicular to the plane by cross-head motion</td>
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<td>Tensile Strength</td>
<td>ISO 1926</td>
<td>MPa</td>
<td>0.51</td>
<td>0.69</td>
<td>0.86</td>
<td>1.2</td>
<td>1.5</td>
<td>1.9</td>
<td>2.4</td>
<td>2.7</td>
<td>3.7</td>
<td>6.1</td>
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<td>9.3</td>
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<td>Parallel to the plane</td>
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<td>Tensile Modulus</td>
<td>ISO 1926</td>
<td>MPa</td>
<td>20</td>
<td>28</td>
<td>32</td>
<td>40</td>
<td>51</td>
<td>62</td>
<td>80</td>
<td>92</td>
<td>128</td>
<td>215</td>
<td>290</td>
<td>338</td>
<td>469</td>
<td>Parallel to the plane by extensometer</td>
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<td>Shear Strength</td>
<td>ISO 1922</td>
<td>MPa</td>
<td>0.31</td>
<td>0.47</td>
<td>0.55</td>
<td>0.69</td>
<td>0.85</td>
<td>0.99</td>
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<td>1.4</td>
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<td>MPa</td>
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<td>17</td>
<td>19</td>
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<td>31</td>
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<td>41</td>
<td>53.5</td>
<td>85</td>
<td>115</td>
<td>137</td>
<td>195</td>
<td>Parallel to the plane by extensometer</td>
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<tr>
<td>Shear Elongation</td>
<td>ISO 1922</td>
<td>%</td>
<td>5.8</td>
<td>6.3</td>
<td>7.0</td>
<td>8.5</td>
<td>9.8</td>
<td>11</td>
<td>13</td>
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<td>18</td>
<td>23</td>
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<td>27</td>
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</tr>
<tr>
<td>Thermal Conductivity</td>
<td>ASTM C518</td>
<td>W/(m²K)</td>
<td>0.029</td>
<td>0.030</td>
<td>0.030</td>
<td>0.030</td>
<td>0.030</td>
<td>0.030</td>
<td>0.030</td>
<td>0.031</td>
<td>0.032</td>
<td>0.037</td>
<td>0.042</td>
<td>0.045</td>
<td>0.059</td>
<td>At +10°C</td>
</tr>
<tr>
<td>Water Absorption Rate</td>
<td>ASTM C 272</td>
<td>Kg/m³</td>
<td>0.11</td>
<td>0.09</td>
<td>0.09</td>
<td>0.07</td>
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<td>0.02</td>
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<td>0.02</td>
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<td>1 week at 40°C</td>
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<td>Water Vapour Transmission</td>
<td>ISO 1663</td>
<td>g/m³ x 24 hrs.</td>
<td>8.2</td>
<td>7.5</td>
<td>7.5</td>
<td>6.6</td>
<td>5.8</td>
<td>5.1</td>
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<td>1.2</td>
<td>0.9</td>
<td>0.8</td>
<td>0.7</td>
<td>23°C and 85% r. h.</td>
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<td>Expansion Coefficient</td>
<td>ASTM D 696</td>
<td>1/°C</td>
<td>4 x 10⁻³</td>
<td>4 x 10⁻³</td>
<td>4 x 10⁻³</td>
<td>3.5 x 10⁻³</td>
<td>3.5 x 10⁻³</td>
<td>3.5 x 10⁻³</td>
<td>3 x 10⁻³</td>
<td>3 x 10⁻³</td>
<td>2.8 x 10⁻³</td>
<td>2.6 x 10⁻³</td>
<td>2.4 x 10⁻³</td>
<td>2.2 x 10⁻³</td>
<td>Between -30° and -20°C</td>
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<td>Specific Heat</td>
<td>Kcal/Kg °C</td>
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<tr>
<td>Flammability</td>
<td>NF F 16 101</td>
<td>M1</td>
<td>M1</td>
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<td>M1</td>
<td>For R200 to R400 contact DIAB</td>
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<td>Heat Distortion Temperature</td>
<td>DIN 53 424</td>
<td>°C</td>
<td>95</td>
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</tr>
</tbody>
</table>

**Notes:**
- Maximum processing temperature is nominally 85°C. However it can be effected by time, pressure and process conditions. Normally Klegecell products can be processed up to the issued values without appreciable dimensional changes. Operating temperature range: -200°C to +70°C. Lifetime consideration must be taken into account for very low and high temperatures. Please contact DIAB for advise before use.
- The data provided is approximate for average density material and shall not be interpreted as minimum guaranteed values. Minimum values to calculate sandwich constructions can be provided on request. The information and statements herein are believed to be reliable but should not be construed as a warranty for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability of their purpose of any information or product referred herein. No warranty of fitness for a particular purpose is made. The company reserves the right to issue new data in replacement. Customers should check that they have the latest issue.