AIREX® T90 is a closed-cell, thermoplastic and recyclable polymer foam with excellent fire, smoke & toxicity (FST) properties.

It has very good mechanical properties and an extraordinary resistance to fatigue, is chemically stable, UV-resistant and has negligible water absorption. It is thermally stable during high temperature processing and post curing. T90 is designed for easy use with all resin systems and processing technologies.

AIREX® T90 is the ideal core material for structural sandwich applications requiring high fire resistance.

**CHARACTERISTICS**

- Superior fire resistance (FAR 25.853; NF 16-101; DIN 5510)
- Outstanding fatigue strength
- Excellent long term thermal stability up to 100 °C (212 °F)
- Best thermal stability in process up to 150 °C (302 °F)
- Good thermal insulation
- Highly consistent material properties
- Easy to process with all types of resin and lamination processes
- Good adhesion (skin-to-core bond)
- Very high chemical stability
- No water absorption, no after-expansion, no outgassing

**APPLICATIONS**

- **Aerospace:** Interiors, galleys, meal trolleys, radomes
- **Road and Rail:** Floors, sidewalls, front ends, interiors, roofs, engine covers
- **Marine:** Decks, interiors, superstructures
- **Industrial:** Covers, containers, x-ray tables, sporting goods
- **Architecture and Construction:** Roofs, claddings, domes, portable building

**PROCESSING**

- Contact molding (hand/spray)
- Vacuum infusion
- Resin infusion / injection (VARTM / RTM)
- Adhesive bonding
- Pre-preg processing
- Compression molding (GMT, SMC)
- Thermoforming
The data provided gives approximate values for the nominal density and DNV minimum values according to DNV type approval certificate.

The information contained herein is believed to be correct and to correspond to the latest state of scientific and technical knowledge. However, no warranty is made, either expressed or implied, regarding its accuracy or the results to be obtained from the use of such information. No statement is intended or should be construed as a recommendation to infringe any existing patent.

www.3ACcorematerials.com

MECHANICAL PROPERTIES

<table>
<thead>
<tr>
<th>Typical properties for AIREX® T90</th>
<th>Unit (metric)</th>
<th>Value1)</th>
<th>T90.60</th>
<th>T90.100</th>
<th>T90.150</th>
<th>T90.210</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>ISO 845</td>
<td>Average</td>
<td>65</td>
<td>110</td>
<td>145</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Typ. range</td>
<td>60 - 70</td>
<td>105 - 115</td>
<td>140 - 150</td>
<td>200 - 220</td>
</tr>
<tr>
<td>Compressive strength perpendicular to the plane</td>
<td>ISO 844</td>
<td>Average</td>
<td>0.80</td>
<td>1.4</td>
<td>2.2</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>0.7</td>
<td>1.2</td>
<td>2.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Compressive modulus perpendicular to the plane</td>
<td>ISO 844</td>
<td>Average</td>
<td>50</td>
<td>80</td>
<td>105</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>35</td>
<td>70</td>
<td>95</td>
<td>145</td>
</tr>
<tr>
<td>Tensile strength perpendicular to the plane</td>
<td>ASTM C297</td>
<td>Average</td>
<td>1.5</td>
<td>2.2</td>
<td>2.7</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>1.2</td>
<td>1.6</td>
<td>2.2</td>
<td>2.4</td>
</tr>
<tr>
<td>Tensile modulus perpendicular to the plane</td>
<td>ASTM C297</td>
<td>Average</td>
<td>85</td>
<td>120</td>
<td>170</td>
<td>225</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>70</td>
<td>90</td>
<td>140</td>
<td>180</td>
</tr>
<tr>
<td>Shear strength</td>
<td>ISO 1922</td>
<td>Average</td>
<td>0.46</td>
<td>0.8</td>
<td>1.2</td>
<td>1.85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>0.4</td>
<td>0.7</td>
<td>1.1</td>
<td>1.5</td>
</tr>
<tr>
<td>Shear modulus</td>
<td>ISO 1922</td>
<td>Average</td>
<td>12</td>
<td>20</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>10.5</td>
<td>18</td>
<td>26</td>
<td>44</td>
</tr>
<tr>
<td>Shear elongation at break</td>
<td>ISO 1922</td>
<td>% Average</td>
<td>25</td>
<td>10</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>15</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Thermal conductivity at 10°C</td>
<td>EN 12667</td>
<td>W/m.K Average</td>
<td>0.037</td>
<td>0.035</td>
<td>0.038</td>
<td>0.045</td>
</tr>
</tbody>
</table>

Standard sheet

| Width2) | mm ± 5 | 1220 | 1220 | 1220 | 1220 |
| Length2) | mm ± 5 | 2440 | 2440 | 2440 | 2440 |
| Thickness | mm ± 0.5 | 5 to 100 | 5 to 100 | 5 to 100 | 5 to 100 |

Finishing Options, other dimensions and closer tolerances upon request

1) Minimum values acc. DNV definition; test sample thickness 20 mm except thermal conductivity (50mm)
2) Alternative width 610 mm, alternative length 1220 mm

Fire performance

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Standard</th>
<th>T90.60</th>
<th>T90.100</th>
<th>T90.150</th>
<th>T90.210</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAR/CS 25.853/ABD0031</td>
<td>Flammability (60s)</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
</tr>
<tr>
<td>FAR/CS 25.853/ABD0031</td>
<td>Smoke density</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
</tr>
<tr>
<td>FAR/CS 25.853/ABD0031</td>
<td>Toxicity</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
</tr>
<tr>
<td>DIN 5510/2</td>
<td>DIN 54837</td>
<td>Burning behavior</td>
<td>S4</td>
<td>S4</td>
<td>S4</td>
</tr>
<tr>
<td>DIN 5510/2</td>
<td>DIN 54837</td>
<td>Smoke density</td>
<td>SR2</td>
<td>SR2</td>
<td>SR2</td>
</tr>
<tr>
<td>DIN 5510/2</td>
<td>DIN 54837</td>
<td>Dripping</td>
<td>ST2</td>
<td>ST2</td>
<td>ST2</td>
</tr>
<tr>
<td>DIN 5510/2</td>
<td>DIN 53438-2</td>
<td>Edge flaming</td>
<td>S1/K1</td>
<td>S1/K1</td>
<td>S1/K1</td>
</tr>
<tr>
<td>DIN 5510/2</td>
<td>Toxicity (FED)</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>DIN 5510/2</td>
<td>Flammability</td>
<td>M2</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
</tr>
<tr>
<td>DIN 5510/2</td>
<td>Smoke density</td>
<td>F1</td>
<td>F1</td>
<td>F1</td>
<td>F1</td>
</tr>
</tbody>
</table>

Rail

<table>
<thead>
<tr>
<th>Standard</th>
<th>T90.60</th>
<th>T90.100</th>
<th>T90.150</th>
<th>T90.210</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 45545-2</td>
<td>Sandwich</td>
<td>HL3 achievable, depending on sandwich design 3)</td>
<td>HL3 achievable 4)</td>
<td></td>
</tr>
<tr>
<td>EN 16-101</td>
<td>Flammability</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
</tr>
<tr>
<td>EN 45545-2</td>
<td>Smoke density</td>
<td>F1</td>
<td>F1</td>
<td>F1</td>
</tr>
<tr>
<td>DIN 4102-1</td>
<td>Material Class</td>
<td>tbd</td>
<td>B1</td>
<td>tbd</td>
</tr>
<tr>
<td>DIN 4102-1</td>
<td>Core alone</td>
<td>HL3 achievable 4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Building & Construction

<table>
<thead>
<tr>
<th>Standard</th>
<th>T90.60</th>
<th>T90.100</th>
<th>T90.150</th>
<th>T90.210</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 13501-1</td>
<td>Fire reaction behaviour</td>
<td>B</td>
<td>C</td>
<td>tbd</td>
</tr>
<tr>
<td>EN 13501-1</td>
<td>Smoke production</td>
<td>s1</td>
<td>s2</td>
<td>tbd</td>
</tr>
<tr>
<td>EN 13501-1</td>
<td>Flaming droplets</td>
<td>d0</td>
<td>d0</td>
<td>d0</td>
</tr>
</tbody>
</table>

3) Certificates available for specific sandwich designs
4) Depending on density, thickness and application; test results on request

The data provided gives approximate values for the nominal density and DNV minimum values according to DNV type approval certificate.

The information contained herein is believed to be correct and to correspond to the latest state of scientific and technical knowledge. However, no warranty is made, either expressed or implied, regarding its accuracy or the results to be obtained from the use of such information. No statement is intended or should be construed as a recommendation to infringe any existing patent.
MECHANICAL PROPERTIES

Typical properties for AIREX® T90

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit (imperial)</th>
<th>Value1)</th>
<th>T90.60</th>
<th>T90.100</th>
<th>T90.150</th>
<th>T90.210</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>ISO 845</td>
<td>lb/ft³</td>
<td>6.8</td>
<td>9.1</td>
<td>13</td>
<td>12.5 - 13.7</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>3.7 - 4.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compressive strength perpendicular to the plane</td>
<td>ISO 844</td>
<td>psi</td>
<td>116</td>
<td>319</td>
<td>551</td>
<td>464</td>
</tr>
<tr>
<td></td>
<td>Average Minimum</td>
<td>102</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compressive modulus perpendicular to the plane</td>
<td>ISO 844</td>
<td>psi</td>
<td>7'250</td>
<td>15'230</td>
<td>24'650</td>
<td>21'025</td>
</tr>
<tr>
<td></td>
<td>Average Minimum</td>
<td>5'075</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tensile strength perpendicular to the plane</td>
<td>ASTM C297</td>
<td>psi</td>
<td>218</td>
<td>392</td>
<td>435</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average Minimum</td>
<td>174</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tensile modulus perpendicular to the plane</td>
<td>ASTM C297</td>
<td>psi</td>
<td>12'325</td>
<td>24'650</td>
<td>32'630</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average Minimum</td>
<td>10'150</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shear strength</td>
<td>ISO 1922</td>
<td>psi</td>
<td>67</td>
<td>174</td>
<td>268</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average Minimum</td>
<td>58</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shear modulus</td>
<td>ISO 1922</td>
<td>psi</td>
<td>1'740</td>
<td>2'900</td>
<td>4'350</td>
<td>7'250</td>
</tr>
<tr>
<td></td>
<td>Average Minimum</td>
<td>1'520</td>
<td></td>
<td></td>
<td></td>
<td>6'380</td>
</tr>
<tr>
<td>Shear elongation at break</td>
<td>ISO 1922</td>
<td>%</td>
<td>25</td>
<td>8</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average Minimum</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal conductivity at 50°F</td>
<td>EN 12667</td>
<td>Btu/in²/hr.F</td>
<td>0.257</td>
<td>0.243</td>
<td>0.263</td>
<td>0.312</td>
</tr>
</tbody>
</table>

Standard sheet

<table>
<thead>
<tr>
<th>Property</th>
<th>Width2)</th>
<th>Length2)</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in ± 0.2</td>
<td>in ± 0.2</td>
<td>± 0.02</td>
</tr>
<tr>
<td>Width</td>
<td>48</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>Length</td>
<td>96</td>
<td>96</td>
<td>96</td>
</tr>
<tr>
<td>Thickness</td>
<td>± 0.02</td>
<td>± 0.02</td>
<td>± 0.02</td>
</tr>
</tbody>
</table>

Fire performance

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Standard</th>
<th>T90.60</th>
<th>T90.100</th>
<th>T90.150</th>
<th>T90.210</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAR/CS 25.853/ABD0031 Flammability (60s)</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
<td></td>
</tr>
<tr>
<td>FAR/CS 25.853/ABD0031 Smoke density</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
<td></td>
</tr>
<tr>
<td>FAR/CS 25.853/ABD0031 Toxicity</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
<td>passed</td>
<td></td>
</tr>
<tr>
<td>Rail</td>
<td>DIN 5510/2 / DIN 54837 Burning behavior</td>
<td>S4</td>
<td>S4</td>
<td>S4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DIN 5510/2 / DIN 54837 Smoke density</td>
<td>SR2</td>
<td>SR2</td>
<td>SR2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DIN 5510/2 / DIN 54837 Dripping</td>
<td>ST2</td>
<td>ST2</td>
<td>ST2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DIN 5510/2 / DIN 54837 Edge flaming</td>
<td>S1/K1</td>
<td>S1/K1</td>
<td>S1/K1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DIN 5510/2 Toxicity (FED)</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rail</td>
<td>EN 16-101 Flammability</td>
<td>M2</td>
<td>M1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 16-101 Smoke density</td>
<td>F1</td>
<td>F1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Building &amp; Construction</td>
<td>DIN 4102-1 Material Class</td>
<td>tbd</td>
<td>B1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Building &amp; Construction</td>
<td>EN 13501-1 Fire reaction behaviour</td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 13501-1 Smoke production</td>
<td>s1</td>
<td>s2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 13501-1 Flaming droplets</td>
<td>d0</td>
<td>d0</td>
<td></td>
</tr>
</tbody>
</table>

3) Certificates available for specific sandwich designs
4) Depending on density, thickness and application; test results on request

The data provided gives approximate values for the nominal density and DNV minimum values according to DNV type approval certificate.

The information contained herein is believed to be correct and to correspond to the latest state of scientific and technical knowledge. However, no warranty is made, either expressed or implied, regarding its accuracy or the results to be obtained from the use of such information. No statement is intended or should be construed as a recommendation to infringe any existing patent.

www.3ACcorematerials.com