SilCool TIA241GF

Liquid-Dispensed Silicone Thermal Pad / Gap Filler

Description

SilCool TIA241GF gap filler is a 2-component, soft, thermally conductive silicone material used to dissipate heat from electronic devices. Its non-slumping pasty consistency offers physical stability that can allow improved processing. SilCool TIA241GF gap filler can be used as a liquid dispensed alternative to pre-fabricated thermal pads in a broad array of thermal designs for electronic applications.

Key Features and Typical Benefits

- Good thermal conductivity
- Fast, low temperature cure
- Convenient 1:1 mix ratio by weight
- Retained softness after cure for enhanced stress relief during thermal cycling
- Excellent slump resistance (stays in place)
- Repairable
- Flame retardant: UL94V-0 equivalent
- Glass bead options available (180 & 250μm) for bond line thickness (BLT) control

Typical Physical Properties

<table>
<thead>
<tr>
<th>Uncured Properties</th>
<th>SilCool TIA241GF (A) gap filler</th>
<th>SilCool TIA241 GF (B) gap filler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance (Part A &amp; B)</td>
<td>Blue</td>
<td>Pale Blue</td>
</tr>
<tr>
<td>Viscosity(^4) (\text{Pa}\cdot\text{s})</td>
<td>250</td>
<td>130</td>
</tr>
<tr>
<td>Mix Ratio by Weight</td>
<td></td>
<td>1:1</td>
</tr>
<tr>
<td>Viscosity(^4) after Mixing</td>
<td>(\text{Pa}\cdot\text{s})</td>
<td>130</td>
</tr>
<tr>
<td>Thixo Index</td>
<td></td>
<td>2.6</td>
</tr>
<tr>
<td>Work Life at 23 °C</td>
<td>Hours</td>
<td>3</td>
</tr>
<tr>
<td>Cure Conditions at 100 °C</td>
<td>Hours</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>at 70 °C</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>at 23 °C</td>
<td>24</td>
</tr>
</tbody>
</table>

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Cured Properties (30 minutes at 100 °C)

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Blue</td>
</tr>
<tr>
<td>Density (23 °C)</td>
<td>3.14 g/cm³</td>
</tr>
</tbody>
</table>
| Thermal Conductivity
(1)        | 4.1 W/m•K              |
| Thermal Resistance
(2)        | 30 (BLT: 80µm) mm²-K/W |
| Hardness (Type E)                 | 45                     |
| Hardness (Shore 00)               | 70                     |
| Tensile Strength                  | 0.2 MPa                |
| Elongation                        | 40%                    |
| Volume Resistivity                | 1.0 x 10⁴ MΩ•m         |
| Dielectric Strength               | 14 kV/mm               |
| CTE
(3)                               | 110 ppm/C°             |
| Low Volatile (D₄-D₁₀)             | 150 ppm                |
| Flame Retardant (UL94)            | V-0 (equivalent)       |
| Relative Temperature Index        | 150 °C (equivalent)    |

(4): Rheometer

Typical physical properties are average data and are not to be used as or to develop specifications.

Potential Applications
Thermal interface for electronic components in Automotive, Consumer, Telecommunication, Lighting and Industrial applications.

General Considerations for Use
Materials such as water, sulfur, nitrogen compounds, organic metallic salts, phosphorus compounds, etc. contained in the surface of the substrate can inhibit curing. A sample patch should always be conducted before proceeding in order to determine substrate compatibility.

- Wear eye protection when handling uncured rubber as it can irritate eyes. In case of eye contact, immediately flush eyes well with water and contact a physician.
- Maintain adequate ventilation in the work place at all times.

While the typical operating temperature for silicone materials ranges from -45°C to 200°C, the long-term maintenance of its initial properties is dependent upon design related stress considerations, substrate materials, frequency of thermal cycles, and other factors.

Storage

- Store in a cool, dry place out of direct sunlight.
- Keep out of the reach of children.

Option for Glass Beads

- Material is available with spacers for bond line thickness control.
- Currently available glass bead sizes: 180µm and 250µm; other sizes can be made available upon request.

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**Additional Test Data**

**Thermal Resistance and BLT**

![Graph of Thermal Resistance vs. BLT]

**BLT vs. Assembly Pressure**

![Graph of BLT vs. Assembly Pressure]

**Thermal Resistance Reliability**

![Graph of Thermal Resistance Reliability]

**Note:** Test data. Actual results may vary.

**Example Test Conditions:**
Sandwich 0.02ml of SilCool TIA241GF gap filler between 10mm x 10mm silicon dies, assemble at 500kPa pressure and cure at 100 °C for 0.5 hours. Measure thermal resistance using Laser Flash Method.

**Patent Status**
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For literature and technical assistance, visit our website at: www.momentive.com

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