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# 3M™ Thermal Interface Materials Selection Guide

## 3M™ Thermally Conductive Interface Tapes

Engineered to provide efficient heat transfer along with adhesion and potentially replacing fasteners, 3M™ Thermally Conductive Interface Tapes are used to bond heat-generating components to heat sinks and cooling devices. Thermal management can help improve device reliability and potentially extend the overall life of electronic devices. Each 3M tape combines high-performance adhesives and thermal conductivity for reliable thermal management. These tapes perform well in applications requiring high adhesion. Acrylic resin can typically operate up to 90-110ºC. These tapes help provide robust thermal management for applications in a variety of market segments, such as automotive, LED lighting, communication infrastructure, and aerospace and defense.

| Product | Color | Base Material Type | Product Thickness mil (mm) | Filler Type | Liner Type | Peel Strength @ 72 hr. Dwell at RT (kg/in)<br>3M Test Method<br>*ASTM D3330 | Thermal Conductivity (W/m-K)<br>ASTM D5470<br>*ASTM C177<br>**3M Test Method | Thermal Impedance (°C-in²/W)<br>3M Test Method<br>*ASTM D1002 | Dielectric Strength (kV/mm)<br>ASTM D149<br>*3M test Method | UL94 Rating | Features |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3M tape 8708-013<br>8708-025<br>8708-050 | Yellowish White | Filled Acrylic Polymer | 5 (0.125)<br>10 (0.25)<br>20 (0.50) | Ceramic | Release Coated Printed Film Liner | 3.0* | 0.6 | - | 15 | - | Good and reliable adhesion to Al and SUS, vibration damping |
| 3M tape 8711 | White | | 2 - 20 (0.05 - 0.50) | | PET Dual Liner | 2.0* | 0.6 | 0.7 | 26 | V-0 | Excellent dielectric performance, soft and conformable to many surfaces, strong adhesion to Al and SUS, halogen free |
| 3M tape 8805 | White | | 5 (0.125) | | Silicone-Treated PET Dual Liner | 1.5 | 0.6* | 0.5 | 26 (8815) | - | Excellent dielectric performance, excellent shock performance, ideal for thin bonding applications, improved wet-out for rough surfaces and low surface energy (LSE) substrates, complied with UL-746A, halogen free |
| 3M tape 8810 | | | 10 (0.25) | | | 2.1 | | 0.9 | | | |
| 3M tape 8815 | | | 15 (0.375) | | | 2.5 | | 1.2 | | | |
| 3M tape 8820 | | | 20 (0.50) | | | 3.0 | | 1.5 | | | |
| 3M tape 8926-02<br>8926-025<br>8926-05 | Yellowish White | | 7.9 (0.20)<br>10 (0.25)<br>20 (0.50) | | Dual-Sided PET Liner | 2.0* | 1.5** | 1.31*<br>1.35*<br>1.50* | 15 | V-0 | Good thermal conductivity, good and reliable adhesion to Al and SUS, vibration damping, polymer carrier for dimensional stability |
| 3M tape 9882 | White | | 2 (0.05) | | Silicone-Treated PET Single Liner | 0.5 - 0.9 (9885) | 0.6* | 0.35 | 30 | - | High mechanical strength, excellent dielectric performance, improved surface wet-out for rough surfaces, excellent shock performance, ideal for thin bonding applications, better adhesion when used with high surface energy (HSE) substrates, halogen free |
| 3M tape 9885 | | | 5 (0.125) | | | | | 0.50 | | | |
| 3M tape 9890 | | | 10 (0.25) | | | | | 0.90 | | | |
| 3M tape 9876-10<br>9876-15 | Copper | Acrylic Polymer on Cu Layer | 3.9 (0.10)<br>5.9 (0.15) | NA | Release Coated Printed Film Liner | 0.8* | 0.8 (250 in XY)<br>0.8 (270 in XY) | 0.30<br>0.45 | 29*<br>24* | - | High thermal conductivity in XY plane, excellent flexibility, no debris or need for sealing during die-cutting, good and reliable adhesion to Al and SUS |

- Tested in accordance with ASTM or 3M Internal Test Method. Contact your 3M Technical Representative for details.
- The above technical information and data should be considered representative or typical only and should not be used for specification purposes.
- Per UL File Number: QMFZ2.E239181.
- UL flame rating is only valid for the material coated on one side of aluminum plate with minimum 1.0 mm thickness and the other side of recognized component (QMTS2) FR-4 laminate at minimum of 0.8 mm thickness.
- Halogen free is defined as having maximum 900 ppm bromine, maximum 900 ppm chlorine, and maximum 1500 ppm total bromine and chlorine, per IEC 61249-2-21.

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## 3M™ Thermally Conductive Epoxy Adhesives

Engineered to provide efficient heat transfer along with strong structural bonding, 3M™ Thermally Conductive Epoxy Adhesives are used to bond heat-generating components to heat sinks, housings, and other cooling assemblies. These two-part epoxy adhesives are mixed at a 2:1 ratio by volume and are designed as electronic-grade materials, with very low outgassing and low chloride ion content. Thermal management can help improve device reliability and potentially extend the overall life of electronic devices. Each 3M epoxy adhesive combines thermal conductivity with the strength and durability of an epoxy system for reliable thermal management.

These adhesives perform well in applications requiring strong adhesion, potting, gap filling, and robust mechanical performance. 3M Thermally Conductive Epoxy Adhesives help provide durable thermal management for applications in a variety of market segments, such as automotive, electronics, LED lighting, communication infrastructure, aerospace and defense, and industrial equipment.

| Product | Color | Filler Type | Viscosity at 23 C (Pa-s) | Curing Condition | Shore D Hardness ASTM D2240 | Overlap Shear Strength N/mm² (psi) ASTM D1002 | T Peel Strength (lbf/in width) ASTM D1876 | Glass Transition Temperature (°C) ASTM E1356 | Thermal Conductivity (W/m-K) ASTM D5470 | Coefficient of Thermal Expansion (ppm/°C) ASTM E831 | Dielectric Strength (kV/mm) ASTM D149 | Volume Resistivity (ohm-cm) ASTM D257 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3M epoxy TC-2707 | Gray | Aluminum Flake (50% by wt.) | Part A: 25<br>Part B: 95 | 24H @ 23°C<br>1H @ 80°C | 75-80 | 18.62 (2700) | 7 | 60-66 | 0.72 | 56 (< Tg)<br>132 (> Tg) | - | $1.6 \times 10^{11}$ |
| 3M epoxy TC-2810 | White | Ceramic (24% by wt.) | Part A: 11-21<br>Part B: 40-90 | 24H @ 23°C<br>1H @ 80°C | 75-80 | 18.62 (2700) | 7 | 60-64 | 0.8 - 1.4 | 62 (< Tg)<br>205 (> Tg) | 44 | $1.5 \times 10^{14}$ |

- Tested in accordance with ASTM or 3M Internal Test Method. Contact your 3M Technical Representative for details.
- The above technical information and data should be considered representative or typical only and should not be used for specification purposes.
- 3M epoxy TC-2707 has a worklife of 60 minutes at room temperature.
- 3M epoxy TC-2810 has a worklife of 100-120 minutes at room temperature.



## Are you still unsure which 3M™ Thermal Interface Material solution is right for your application?

Our team of Electronics Assembly Materials specialists will help you select the right materials.

**Regulatory:** For regulatory information about this product, contact your 3M representative.

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