

# 3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9719 for LSE Substrates and High Temperature Applications

## Product Description

3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9719 is a silicone adhesive isotropically conductive pressure sensitive tape. Tape 9719 conducts electricity isotropically (X, Y, Z) and is suitable for low surface energy EMI/RFI shield and EMI/RFI gasket attachment to metal surfaces. The double-sided Tape 9719 provides adhesion to low surface energy substrates and performs at elevated temperatures for short periods (up to 400°F [204°C]). Tape 9719 utilizes conductive fibers to provide good electrical performance with improved handling characteristics.

Tape 9719 may be used with many types of foil laminate shields, to provide a customized shielding solution. This tape may also be used to attach conductive fabric/foam core EMI gaskets to electronic cabinetry. Tape 9719 may be applied in strips or die cut to specific shapes and sizes. Compared to screws or other mechanical connectors, Tape 9719 provides reduced assembly time and excellent grounding between substrates for reduced EMI emissions.

## Construction

| Product                    |  | 3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9719 |
|----------------------------|--|------------------------------------------------------------------|
| Adhesive Type              |  | Silicone                                                         |
| Filler Type                |  | Conductive Fibers                                                |
| Release Liner              |  | Dual Polyester Liner                                             |
| Approximate Thickness:     |  |                                                                  |
| Tape Only:                 |  | .004 in. (0.10 mm)                                               |
| Release Liner Combination: |  | .004 in. (0.10 mm)                                               |



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## Typical Physical Properties

**Note:** The following technical information and data is based upon limited 3M testing conditions and should not be used for specification purposes.

### Electrical Properties

| Contact Resistance:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Substrate Tested (Foil/Rigid Plate) |                              |                     |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------|---------------------|-------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Aluminum/<br>Aluminum               | Aluminum/<br>Stainless Steel | Copper/<br>Aluminum | Copper/<br>Copper |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | < 2.5 Ω                             | < 2.0 Ω                      | < 1.0 Ω             | < 0.5 Ω           |
| Results based upon four wire (Kelvin probe) resistance measurements made with crossed pieces of Foil/3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9719/Rigid plate construction using a 1.0 in x 1.0 in square piece of Tape 9719. The rigid metal surface was prepared with a Scotch-Brite™ pad to roughen the surface and cleaned with isopropyl alcohol. Test results will vary with test method set-up, sample size tested, assembly methods, aging, substrate types, product lot to lot normal variation, etc. |                                     |                              |                     |                   |
| Minimum Overlap Length:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1/4 in. (6 mm)                      |                              |                     |                   |
| Minimum Overlap Width:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1/2 inch (12 mm)                    |                              |                     |                   |

### Adhesion Properties

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Adhesion in oz/in (g/cm)  |                          |                            |                           |                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------|----------------------------|---------------------------|-----------------------------|
| Substrate                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 15 min. at<br>72°F (22°C) | 1 hour at<br>72°F (22°C) | 24 hours at<br>72°F (22°C) | 1 hour at<br>158°F (70°C) | 24 hours at<br>158°F (70°C) |
| Stainless Steel                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | > 30 (335)                | > 30 (335)               | > 30 (335)                 | > 30 (335)                | > 30 (335)                  |
| Aluminum                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | > 30 (335)                | > 30 (335)               | > 30 (335)                 | > 30 (335)                | > 30 (335)                  |
| Copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | > 30 (335)                | > 30 (335)               | > 30 (335)                 | > 30 (335)                | > 30 (335)                  |
| Silicone Rubber                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | > 20 (226)                | > 20 (226)               | > 20 (226)                 | > 20 (226)                | > 20 (226)                  |
| Based upon a 90 degree peel sample, following ASTM D3330 test method. Aluminum foil (2 mil thick) was used as the flexible backing to the Tape 9712. The substrates listed are all rigid metal plates. The 158°F (70°C) aged peel samples are indicative of the typical long term adhesion build expected at room temperature. Test results will vary with test method set-up, sample size tested, assembly methods, aging, substrate types, product lot to lot normal variation, etc. |                           |                          |                            |                           |                             |

### Operative Temperature Range and Shelf Life

| Short Term Exposure (minutes, hours) | Long Term (days, weeks)                                                                                      |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 400°F (204°C)                        | 300°F (149°C)**                                                                                              |
| Shelf Life of Tape in Roll Form:     | 12 months from date of manufacture when stored in original cartons at 70°F (21°C) and 50% relative humidity. |

\*\*For longer times or higher temperatures, please contact 3M to review your application details.

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## Available Sizes\*

| Available Widths:                     | Standard Length   | Maximum Length     |
|---------------------------------------|-------------------|--------------------|
| 1/4 inch - 14 inch<br>(5 mm - 381 mm) | 36 yd<br>(32.9 m) | 108 yd<br>(98.8 m) |
| Nominal Slitting Tolerance:           | 1/32 in (0.8 mm)  |                    |

\*Special requirements for wider widths or longer lengths should be discussed with 3M Customer Service personnel.

## Application Techniques

- To obtain maximum adhesion, the bonding surfaces must be clean and dry. Isopropyl alcohol or non-polar solvent such as Heptane or Toluene can be used as a cleaning solvent.\*
- Bond strength depends on the amount of pressure used in the bonding process and mechanical properties of the substrate. Adhesion can be optimized by using a roller or other means to reduce air entrapment and by using flat or conformable substrates. Maximum adhesion is typically achieved after 24 hrs.
- Electrical performance can be optimized by abrading the surface of the metal using 3M™ Scotch-Brite™ pads.
- Recommended application temperature between 60°F - 100°F (15°C - 38°C).
- Tape 9719 can be removed by separating the parts using torque for rigid parts or peel for flexible ones. Remove the adhesive by pulling off as much as possible by hand. Residual adhesive may be removed by rubbing with your finger or by application of 3M Packaging Tape over the residual adhesive followed by removal of the packaging tape. The surfaces should be cleaned again before applying a new piece of Tape 9719. The force required to separate the parts and/or remove the adhesive can be reduced by softening the adhesive by heating to 158°F - 212°F (70°C - 100°C) or using solvents such as Heptane or Toluene.\*

**\*Note:** When using solvents, extinguish all ignition sources and follow manufacturer's precautions and directions for use.

## General Information

3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9719 provides good adhesion to low surface energy and/or other metal surfaces and provides low electrical resistance that is stable over time. The pressure sensitive nature and fiber reinforcement of Tape 9719 makes this product convenient to use. It is easy to release from the liners and provides good handling properties.

# 3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9719 for LSE Substrates and High Temperature Applications

## Application Ideas

- **Attaching Foil Laminate EMI Shields**

3M™ XYZ-Axis Electrically Conductive Tape Adhesive Transfer Tape 9719 is suitable for attaching foil laminate EMI shields to electronic and electrical devices. These shields typically consist of either copper or aluminum foils laminated to PVC. Tape 9719 provides good adhesion (initial and ultimate) as well as low electrical resistance. Tape 9719 may be applied in strips or die cut to specific shapes and sizes. Compared to screws or other mechanical connector, Tape 9719 provides reduced assembly time and a solid bond line with no gaps for EMI emission.

- **Attaching EMI Gaskets**

Tape 9719 may also be used for attaching silicone EMI gaskets to electronic cabinets, such as server cabinets or disk drive array cabinets. These gaskets typically consist of LSE conductive fabric over a foam core, and come in a variety of shapes and sizes. Tape 9719 may be cut into strips as narrow as 1/8 inch to provide adhesion for even the narrowest of gaskets. Tape 9719 may also be pre-applied to the gasket for reduced final cabinet assembly time. In many cases, Tape 9719 eliminates the need to chemically prime the LSE gasket, which is otherwise difficult to bond.

- **Grounding Computer Antistatic and Glare Reduction Screens**

Computer antistatic and glare reduction screens need to be electrically attached to the grounding mechanism. Tape 9719 penetrates through anti-smudge coatings over the conductive layer to make an electrical connection. Placing Tape 9719 along the edges of such a screen provides many connection points to the antistatic coating resulting in good electrical performance.

- **Assembly of EMI Cages in Telecommunications Equipment**

Tape 9719 is ideal for assembly of an EMI cage to a printed circuit board, often required in telecommunications equipment. The EMI cages are typically constructed from aluminum frames and lids to protect components on the PCB from EMI/RFI. The metal frame needs to be grounded to a wide copper trace etched around the perimeter of the components to be protected. Tape 9719 is applied as a die cut in the shape of the etched perimeter trace, then the frame is bonded to the perimeter trace. Tape 9719 provides for rapid assembly and grounding in one step. Compared with solder attach or liquid conductive adhesive attachment of the EMI cage, Tape 9719 reduces assembly time and exposure to elevated temperatures.

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## Certification/Recognition

**MSDS:** 3M has not prepared a MSDS for this product which is not subject to the MSDS requirements of the Occupational Safety and Health Administration's Hazard Communication Standard, 29 C.F.R. 1910.1200(b)(6)(v). When used under reasonable conditions or in accordance with the 3M directions for use, the product should not present a health and safety hazard. However, use or processing of the product in a manner not in accordance with the directions for use may affect its performance and present potential health and safety hazards.

**TSCA:** This product is defined as an article under the Toxic Substances Control Act and therefore, it is exempt from inventory listing requirements.

**RoHs Complaint/REACH Compliant:** This product complies with the European Union's "Restriction of Hazardous Substances" (RoHs) initiative and with European REACH regulations 2002/95/EC and 2005/618/EC.

## For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-866-599-4227. Address correspondence to: 3M, Electronics Markets Materials Division, 3M Center, Building 225-3S-06, St. Paul, MN 55144-1000. Our fax number is 651-778-4244 or 1-877-369-2923. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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### Electronics Markets Materials Division

3M Center, Building 225-3S-06  
St. Paul, MN 55144-1000  
1-866-599-4227 phone  
651-778-4244 fax  
[www.3M.com/electronics](http://www.3M.com/electronics)

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