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3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9723

Product Description

3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape (ECATT) 9723 is an isotropically conductive pressure sensitive adhesive tape. 3M ECATT 9723 conducts electricity through the thickness (Z-axis) and in the plane of the adhesive (X-Y planes) and is ideal for EMI/RFI shield and EMI/RFI gasket attachment to metal surfaces. The tape consists of a high performance 3M adhesive loaded with conductive fibers. The result is a double-sided tape providing both higher adhesion and better electrical performance (lower surface resistance) than previous 3M™ Electrically Conductive Adhesive Transfer Tape 9713. The conductive fibers in tape 3M ECATT 9723 also provide good handling characteristics. 3M ECATT 9723 is ideal for attaching EMI shields to electronic and electrical devices. 3M ECATT 9723 may be used with many types of foil laminate shields, such as aluminum/ PVC or copper/ PVC laminates, to provide a customized shielding solution. This tape may also be used to attach conductive fabric/ foam core EMI gaskets to electronic cabinetry. 3M ECATT 9723 may be applied in strips or die cut to specific shapes and sizes. Compared to screws or other mechanical connectors, 3M ECATT 9723 provides reduced assembly time and a solid bond line with no gaps which might result in EMI emission.

Construction

Product	3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9723
Adhesive Type	Filled Acrylic
Filler Type	Conductive fibers
Tape Thickness	0.060 mm (0.0024 in.) ± 0.010 mm (0.0004 in.)
Release Liner	Dual Liners with 50µm Transparent PET film (Easy side) / 75µm Blue PET film (Tight side)
Roll Length	Standard: 50MT Custom size can be supplied by request

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Typical Physical Properties and Performance Characteristics

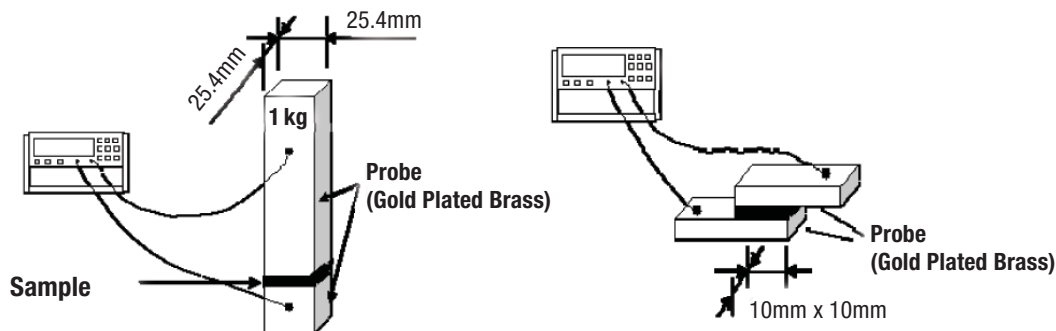
Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Product	3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9723	Test Method
Electrical Properties		
¹ Z-axis Resistance (1 inch x 1 inch)	< 0.001 Ω	3M TS-EMC-001
² Z-axis Resistance (10 mm x 10 mm)	< 0.005 Ω	3M TS-EMC-001
³ Surface Resistance	< 0.1 Ω / □	3M TS-KOR-939
Outgassing	Total Mass Loss (TML): 1.0% Collected Volatile Condensed Material (CVCM): 0.02% Water Vapor Recovered (WVR): 0.25%	ASTM E-595
Minimum Overlap Length	5.0 mm	
Minimum Overlap Width	3.0 mm	
Adhesion Properties		
⁴ 180° Peel Adhesion (FS)	1.1 Kg / 25mm	3M TS-EMC-002
⁵ 180° Peel Adhesion (BS)	1.1 Kg / 25mm	3M TS-EMC-002
Operating Temperature Range & Shelf Life		
Short Term Exposure (minutes, hours)		Long Term Exposure (days, weeks)
120°C		70°C
Shelf Life of Tape in Roll Form		24 months from date of manufacture when stored in original cartons at 23°C and 50% relative humidity.

¹Z-axis Resistance: Measured between gold plated brass probes with 1 kg load.
Contact area: 25.4 mm x 25.4 mm, Dwell time: 60 seconds.

²Z-axis Resistance: Measured between gold plated brass probes without load.
Contact area: 10 mm x 10 mm, Dwell time: 60 seconds.

³Surface Resistance: Cu Plate size 25 mm x 25 mm. Dwell time: 10 seconds.



⁴180° Peel Adhesion (FS): 25 mm W x 200 mm L size sample, SUS substrate, Cross-head speed - 305 mm/min.
FS means faceside, non-liner side (tape inside.) Test after 1 day dwelling at RT.

⁵180° Peel Adhesion (BS): BS means back side, liner laminated side.

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Application Techniques

Bonding

- To obtain maximum adhesion, the bonding surfaces must be clean and dry.
- Pressure must be applied to the bond line after assembly to wet the substrates with 3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9723 and to engage the conductive particles or fibers with the substrates to make electrical connection. Mechanical pressure (roller, metal bar) or finger pressure at 5 to 15 psi (0.03 to 0.10 Mpa) is suggested at 20°C (68°F) to 25°C (77°F). The end user may find through testing that a higher pressure could be more effective in their end use design to meet their specific design criteria. Heat may be applied simultaneously to improve wetting and final bond strength. **See Note A.**
- Tape 9723 is suggested to be applied at a maximum temperature range not to exceed 60°F - 158°F (15°C - 70°C). Tape application below 50°F (10°C) is not suggested because the adhesive will be too firm to wet the surface of the substrate, resulting in low adhesion. **See Note A.**
- Adhesion builds with time, up to 24 to 72 hours may be required to reach final adhesion values.

Note A) Regarding the application of Temperature, Pressure and Time (T-P-T) during assembly and/or lamination: Care must be taken by the end user during assembly as the modulus of the tape will be reduced with the application of heat.

- An application method with ranges of not more than: 5-15 psi @ 15-70°C for 2-30 seconds is suggested as a set of initial evaluation ranges. An example of initial T-P-T that may be evaluated is: 8 psi applied via an assembly fixture using an air actuated pressure pad (pad is a medium firm elastomer) for 5 seconds @ 23°C. The end user may find assembly T-P-T outside these limits works well in their unique application. The noted T-P-T is a suggested starting point of tape bonding criteria and will be influenced by Tape 9723 part size, substrate types, substrate modulus, surface features, flatness, assembly fixtures, etc.
- Final bond strength and conductive performance will be impacted by how Temperature-Pressure-Time interact in an end use assembly method to the desired substrates.
- Care must be used to minimize excessive “Temperature-Pressure-Time” assembly methods as they are applied to the tape during assembly so that the conductive filler/acrylic adhesive matrix is not damaged leading to poor performance (ie: excessive squeeze-out of tape, filler-interface damage, minimize over compression and conductive filler/adhesive matrix damage.)
- A Design of Experiments (DOE) is suggested to establish the optimum bonding conditions for each application assembly.

General Information

3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9723 provides good adhesion to most metal surfaces and provides low electrical resistance that is stable over time. The pressure sensitive nature and fiber reinforcement of 3M ECATT 9723 makes this product convenient to use and 3M ECATT 9723 also has very good handling properties including good liner release.

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Application Ideas

- **Attaching Foil Laminate EMI Shields**

3M™ XYZ-Axis Electrically Conductive Adhesive Transfer Tape 9723 is ideal for attaching foil laminate EMI shields to electronic and electrical devices. These shields typically consist of either copper or aluminum foils laminated to PET or PVC. 3M ECATT 9723 provides good adhesion (initial and ultimate) as well as low electrical resistance. 3M ECATT 9723 may be applied in strips or die cut to specific shapes and sizes. Compared to screws or other mechanical connector, 3M ECATT 9723 provides reduced assembly time and a solid bond line with no gaps for EMI emission.

- **Attaching EMI Gaskets**

3M ECATT 9723 may also be used for attaching EMI gaskets to electronic cabinets, such as server cabinets or disk drive array cabinets. These gaskets typically consist of conductive fabric over a foam core, and come in a variety of shapes and sizes. 3M ECATT 9723 may be cut into strips as narrow as 3mm width to provide adhesion for even the narrowest of gaskets. 3M ECATT 9723 may also be pre-applied to the gasket for reduced final cabinet assembly time.

- **Grounding Mobile Hand Held and Flat Display Panel**

Key pads and display modules in Mobile Hand Held devices and Flat display panels as LCD and PDP need to be electrically attached to the grounding mechanism. 3M ECATT 9723 penetrates through some specially functioned layers as anti-smudge and anti-reflection coatings over the conductive layer to make an electrical connection. Placing 3M ECATT 9723 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**

3M ECATT 9723 is ideal for assembly of an EMI cage to PCB (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. 3M ECATT 9723 is applied as a die cut in the shape of the etched perimeter trace, then the frame is bonded to the perimeter trace. 3M ECATT 9723 provides the shape of the etched perimeter trace, then the frame is bonded to the perimeter trace. 3M ECATT 9723 provides for rapid assembly and grounding in one step. Compared with solder attach or liquid conductive adhesive attachment of the EMI cage, 3M ECATT 9723 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.

For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-251-8634. 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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