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Technical Data | November 2018

3M™ Electrically Conductive Double-Sided Tapes 9701-50 and 9701-100

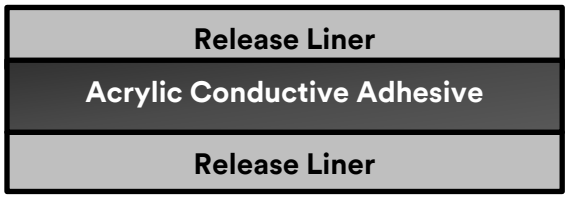
Product Description

3M™ Electrically Conductive Double-Sided Tapes 9701-50 and 9701-100 are XYZ-electrically conductive pressure sensitive adhesive (PSA) tapes. 3M tapes 9701-50 and 9701-100 consist of a conductive matrix carrier (nickel/copper coated conductive non-woven fabric matrix) designed for PSA attachment to the desired grounding surfaces. These acrylic-based adhesive solutions offer high adhesion and good grounding performance to many surface types. 3M tapes 9701-50 and 9701-100 provide improved electrical performance and reliable small size contacts in a thicker format, along with excellent EMI shielding.

Key Features

- XYZ-conductivity through the adhesive
- Excellent conformability and quick bonding
- Good EMI shielding in bond line gap
- Thicker construction to conform to non-flat surfaces
- Improved electrical contact to small size areas
- Good handling and workability

3M™ Electrically Conductive Double-Sided Tapes 9701-50 and 9701-100



Product Construction/Material Description

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

3M™ Electrically Conductive Double-Sided Tapes 9701-50 and 9701-100	
Property	**Value**
Color	Face side: Gray metallic Back side: Gray metallic
Conductive Adhesive Type	Acrylic conductive adhesive
Release Liner	Face side: Transparent PET release liner Back side: Transparent PET release liner

*The product is available in 1050 mm x 100 meter. Contact your local 3M representative for more information.

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Applications

- Typically used for applications requiring excellent electrical conductivity from the application substrate through the adhesive to a second substrate.
- Grounding and EMI shielding in equipment and components.

Application Techniques

Note: Carefully read and follow the manufacturer's precautions and directions for use when working with solvents. Tape application below 10°C (50°F) is not suggested. Once properly applied, low temperature holding power is generally satisfactory.

The bond strength of 3M™ Electrically Conductive Double-Sided Tapes 9701-50 and 9701-100 depends on the amount of adhesive-to-surface contact developed during application and substrate type and surface conditions.

- Firm application pressure helps develop better wet-out and adhesive contact and may lead to improved bond strength as well as electrical conductivity. Pressure must be applied to the bond area after assembly to ensure sufficient wet-out of the 3M tapes 9701-50 and 9701-100 adhesive to the substrates and to engage the conductive acrylic adhesive fillers with the substrates to make electrical connection. Mechanical pressure (roller, metal bar) or finger pressure at 5-15 psi. (Optimally the application conditions are determined via a set of Design of Experiments (DOE) using a range of application pressures, dwell time and temperatures (suggested initial range might include 5-15 psi, 2-5 seconds, 21°C-38°C).
- Heat may be applied simultaneously with pressure to improve wetting, final bond strength and electrical conductivity. Suggested temperature range to evaluate is in the 38°C-60°C range.
- To obtain optimum adhesion, the bonding surfaces must be clean, dry and well unified. Some typical surface cleaning solvents are isopropyl alcohol or heptane.

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. Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is shipped with the commercialized product.

3M™ Electrically Conductive Double-Sided Tapes 9701-50 and 9701-100			
		Target Values	
Property	**Method**	**9701-50**	**9701-100**
Thickness	ASTM D1000[a]	50 µm	100 µm
Adhesion to SUS	ASTM D1000[a]	Face Side: 1000 gf/in Back Side: 1000 gf/in	
Electrical Resistance through XY-axis	3M ETM-7[bc]	0.2 Ω on the both sides	
Electrical Resistance through Z-axis	3M ETM-12[b]	0.05 Ω	0.08 Ω

[a]Methods listed as ASTM are tested in accordance with the ASTM method noted

[b]3M test method notes attached

[c] Test sample coupon length dimension is orientated parallel to the Machine Direction (MD) of the sample under test (roll unwind direction).

- MD and CD (Cross Direction) for ETM-7 testing provides different typical values.

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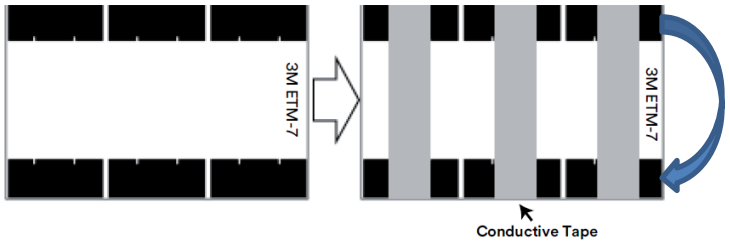
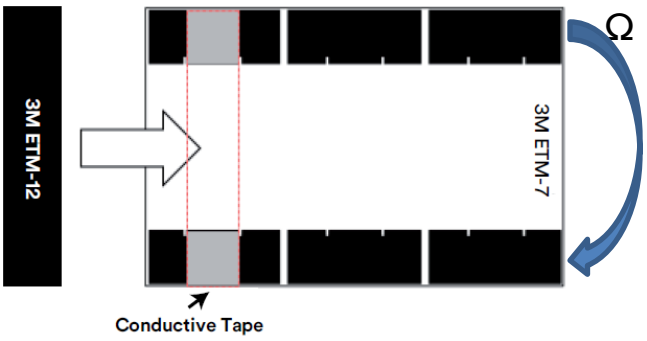
3M ETM-7: XY-Axis Electrical Resistance through Adhesive[bc]

Place a strip of the single (double) side conductive tape in 10 mm x 40 mm with adhesive side down between the electrodes on 3M ETM-7 testing board. After initial hand lamination to provide for a 10 mm x 10 mm contact area between the tape and electrodes, apply a 2kg rubber roller across the tape one time. Application method simulates a typical manufacturing process that might be used to apply the tapes to a surface. After 20 minutes of dwell time, the DC resistance between the electrodes are measured with a micro-ohm meter. The resistance results are recorded after 5 ~ 30 seconds for initial resistance.



3M ETM-12: Z-Axis Electrical Resistance through Adhesive[b]

Place conductive tape pieces in 10 mm x 10 mm on the center of the electrodes on 3M ETM-7 testing board. Then place 3M ETM-12 testing board with the gold plated side down on the tapes between electrodes. After initial hand lamination to provide for a 10 mm x 10 mm contact area between the tapes and electrodes, apply 2kg rubber roller across the tape one time. Application method simulates a typical manufacturing process that might be used to apply the tapes to a surface. After 20 minutes of dwell time, the DC resistance between the electrodes are measured with a micro-ohm meter. The resistance results are recorded after 5 ~ 30 seconds for initial resistance.



Storage and Shelf Life

The shelf life of 3M™ Electrically Conductive Double-Sided Tapes 9701-50 and 9701-100 is 6 months from the date of manufacture when stored in the original packaging materials and stored at 21°C (70°F) and 50% relative humidity.

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Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is established when the product is commercially available from 3M. The commercially available product will have a COA specification established. The COA contains the 3M specifications and test methods for the products performance limits that the product will be supplied against. The 3M product is supplied to 3M COA test specifications and the COA test methods. Contact your local 3M representative for this product's COA.

This technical data sheet may contain preliminary data and may not match the COA specification limits and/or test methods that may be used for COA purposes.

Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is shipped with the commercialized product.

Safety Data Sheet: Consult Safety Data Sheet before use.

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

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