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Technical Data | August 2020

3M™ Electrically Conductive Double-Sided Tape 9772 Series

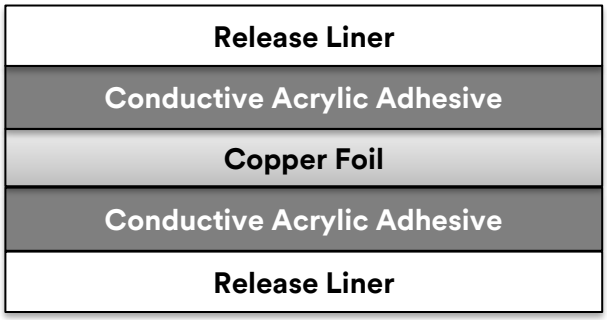
Product Description

3M™ Electrically Conductive Double-Sided Tape 9772 Series is a family of XYZ electrically conductive pressure sensitive adhesive (PSA) tapes. 3M tape 9772 series consist of tapes with a conductive matrix carrier (copper foil) that are electrically conductive and are designed for PSA attachment to the desired grounding surfaces. The products are an acrylic based adhesive solution and offers high adhesion and good grounding performance to many surface types. 3M tape 9772 series helps provide improved electrical performance and reliable small size contacts in a thinner format. 3M tape 9772 series is useful for grounding, PSA attachment and EMI shielding designs.

Key Features

- XYZ-conductivity through the adhesive
- Excellent conformability and quick bonding
- Good EMI shielding in bond line gap
- Improved electrical contact to small size areas / Good handling and workability

Product Construction / Materials Description



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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 Tape 9772 Series	
Property	**Value**
Color	Copper
Conductive Adhesive Type	Acrylic conductive adhesive
Release Liner	Transparent PET release liner

Note: The product is available in 500 mm x 100 meter. Contact your local 3M representative for more information.

3M™ Electrically Conductive Double-Sided Tape 9772 Series

Typical Physical Properties and Performance Characteristics

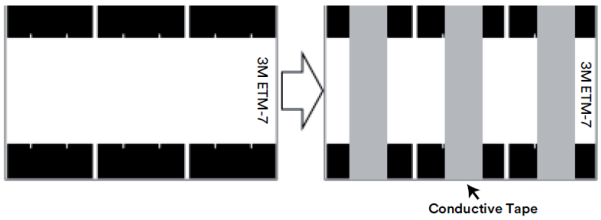
Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes. Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is provided once the product is approved by 3M for general commercialization and development work is completed.

3M™ Electrically Conductive Double-Sided Tape 9772 Series			
Properties	**Test Method**	**Typical Value***	**Typical Value***
3M Tape 9772-10 3M Tape 9772-20 3M Tape 9772-25 3M Tape 9772-30 3M Tape 9772-35 3M Tape 9772-50	ASTM method D1000*	Thickness: 0.011 mm 0.020 mm 0.024 mm 0.030 mm 0.035 mm 0.050 mm	180° peel adhesion to SUS (FS and BS side): 800 gf/inch 900 gf/inch 1000 gf/inch 1100 gf/inch 1100 gf/inch 1000 gf/inch
Electrical resistance through adhesive (FS and BS side)	3M test method ETM-7**	0.015 ohms	

* Tested in accordance with ASTM D1000 test method.
** 3M test methods as described below.

ETM-7: XY-Axis Electrical Resistance through Adhesive**

Place a strip of the single (double) side conductive tape in 10 mm x 50 mm with adhesive side down between the electrodes on 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.



Shielding Effectiveness

Many factors determine the shielding effectiveness of a conductive adhesive tape, including type and thickness of the conductive layers, adhesive strength, degree of contact, smoothness of application surface, test frequency, etc. For 3M™ Electrically Conductive Double-Sided Tape 9772 Series, the typical shielding effectiveness is expected to be in the range of 40 dB to 60 dB, using a standard EMI shielding test methods and through the thickness of the sample tested.

3M™ Electrically Conductive Double-Sided Tape 9772 Series

Applications

3M™ Electrically Conductive Double-Sided Tape 9772 Series is typically used for applications requiring excellent electrical conductivity from the application substrate through the adhesive to a second substrate. Common uses include grounding and EMI shielding in equipment, components, etc.

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 3M™ Electrically Conductive Double-Sided Tape 9772 Series bond strength depends on the amount of adhesive-to-surface contact developed during application and substrate type and surface conditions.

1) 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 tape series 9772 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).
2) 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.
3) To obtain optimum adhesion, the bonding surfaces must be clean, dry and well unified. Some typical surface cleaning solvents are isopropyl alcohol or heptane.

Storage and Shelf Life

The shelf life of 3M™ Electrically Conductive Double-Sided Tape 9772 Series is 12 months (9 months for 9772-10) from the date of manufacture when stored in roll form, in the original packaging materials, and stored at 21°C (70°F) and 50% relative humidity.

Once the tape is removed from the original packaging materials, the tape should be converted, shipped and stored in the prescribed temperature and humidity-controlled conditions to ensure stable tape performance. Adhesion, tack, conductivity and reliability of the tape in an application can be reduced if the tape is not controlled to the prescribed handling and usage conditions.

In addition, in some application's the tape may be converted (die cut, laminated to other materials or release/processing liners) in such a manner that the release liner that the product tape is shipped with is removed and the different release or processing/carrier liner is applied to the adhesive side of the tape. The new release/carrier liner may transfer release agents (silicone, fluro-polymer, etc.) to the tape's adhesive surface and thus reduce the applied tack and/or adhesion strength of the tape in the end user's application to a surface versus when no release/carrier liner changes have occurred. Any proposed release/carrier liners to be used with the tape should be tested with the tape to ensure that the tapes performance is not negatively impacted for the intended end use application and that shelf life is not negatively impacted. If a poor performing liner is selected for a liner exchange, it can have a significant negative impact on the conductive tapes adhesion/tack/electrical performance and/or significantly reduce shelf life.

Certificate of Analysis (COA)

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

3M™ Electrically Conductive Double-Sided Tape 9772 Series

Safety Data Sheet: Consult Safety Data Sheet before use.

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

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use: Many factors beyond 3M's control and uniquely within user's control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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