

3M™ Electrically Conductive Single-Sided Tape 3304BC-S

Product Description

3M™ Electrically Conductive Single-Sided Tape 3304BC-S is a single-sided conductive black foil tape that consists of conductive black copper foil carrier and a unique conductive non-woven carrier based acrylic adhesive. The unique design of 3M tape 3304BC-S provides excellent XYZ based conductivity for reliable contact to small grounding areas, but also enhances the physical properties of the tape for good workability. Compared to other conventional single-sided conductive tapes, 3M tape 3304BC-S provides improved electrical performance and reliability for small size contacts. Electrical contact points increase on the adhesive's exposed surface to aid in grounding performance because of the tape's unique conductive adhesive structure and conductive non-woven fiber design on the adhesive surface.

3M tape 3304BC-S is an upgraded version of 3M™ Electrically Conductive Single-Sided Tape 3304BC with an improved surface scratch resistant black copper foil and continues to use the same high performance conductive adhesive design with an optimized release liner design.

Features and Benefits

- XYZ-axis conductive through the adhesive
- Scratch resistant black copper foil
- Excellent conformability and edge conformance
- Excellent EMI/ESD performance and electrical performance over time
- Great overlap resistance and electrical contact on small areas
- Good handling and workability

Applications

3M tape 3304BC-S is typically used for applications requiring excellent electrical conductivity from the application substrate through the adhesive to the foil backing and needs good electrical conductivity through the top of the foil backing. Common uses include grounding and EMI shielding in equipment, components, and shielded rooms.

Product Construction / Materials Descriptions

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

Conductive Black
Copper Foil
Conductive Acrylic Adhesive
Polyester Release Liner

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3M™ Electrically Conductive Single-Sided Tape 3304BC-S	
Property	Value
Color	Matte black
Backing Type	Conductive black copper foil matrix (S-type)
Adhesive Type	Acrylic conductive non-woven (Ni/Cu) adhesive
Release Liner	Silicone coated PET film

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

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 Single-Sided Tape 3304BC-S		
Property	Value	Test
Thickness	45 μm	ASTM D1000*
Adhesion to SUS	1300 gf/in	ASTM D1000*
XY-axis resistance of the backing	0.1 Ω	3M ETM-1**
Electrical resistance through adhesive	0.05 Ω	3M ETM-7***

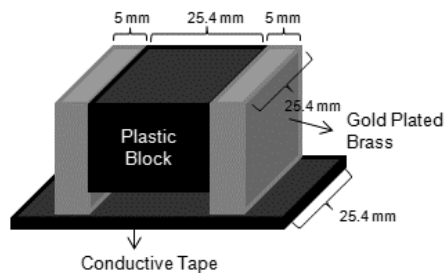
* Tested in accordance with ASTM D1000 test method.

** 3M test method: ETM-1 as described below.

*** 3M test method: ETM-7 as described on the next page.

**3M ETM-1 Test (XY-axis resistance of the backing)

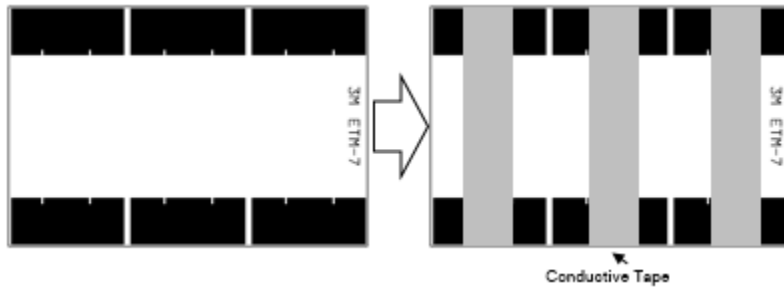
Prepare the tape strip in 25.4 mm width and place the adhesive side of the tape down on to a clean glass plate using light finger pressure. Place the gold-plated block jig (250 g weight) onto the backing side of conductive tape, then start measuring the DC resistance between the electrodes with micro-ohm meter and record the resistance after 15 ~ 60 seconds.



***3M ETM-7 Test (XY-axis electrical resistance through adhesive)

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.

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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 tapes 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 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. (Optimal application conditions are determined by 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 between 38°C-60°C.
3. To obtain optimum adhesion, the bonding surfaces must be clean, dry and well unified. Some typical surface cleaning solvents are isopropyl alcohol or heptanes.

Storage and Shelf Life

The shelf life of 3M™ Electrically Conductive Single-Sided Tape 3304BC-S is 12 months from the date of manufacture when stored in original cartons, in roll form, at 21°C (70°F) and 50% relative humidity.

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.

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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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