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## How Electrically Conductive Tapes Work

3M™ Electrically Conductive Adhesive Transfer Tapes are designed for use in a variety of electronics assembly operations where components need to be held in place while, at the same time, allowing electrical current to pass through them. They are commonly used to attach EMI (electromagnetic interference)/RFI (radio-frequency interference) shields to devices as well as connecting and/or bonding various substrates together for grounding application needs.

### How Electrically Conductive Adhesives Work

Here's how they work... Conductive components are suspended within the tape polymer matrix, and when these conductive components come into contact with various substrates an electric current (very low mill-Amps range typically associated with grounding) could be allowed to flow between the substrates. Typical conductive components include various metal type particles or metalized fiber-based webs that are conductive. The various metals used could include silver, nickel, copper and graphite for example. Variations in the components type used along with the design of the conductive components within the tape affect the adhesive's resistivity or how strongly it resists or conducts the flow of electric current. Two types of conductive tapes exist. Isotropic Conductive Adhesives (ICA's) are conductive in all directions (XYZ-axis) within a defined volume while Anisotropic Conductive Adhesives (ACA's), generally referred to as Z-axis, are conductive in one direction based on the application use.

### Advantages over Soldering Processes

3M™ Electrically Conductive Adhesive Transfer Tapes help provide many advantages over traditional, conventional soldering processes used for grounding, mechanical fasteners (screws, clips, etc.) and assembly. For instance, 3M™ Electrically Conductive Adhesive Tapes work better in temperature sensitive applications since they are designed to provide a better bond below typically soldering temperatures. In addition, the 3M adhesive tapes help provide more mechanical flexibility than solder which helps them withstand vibrations. 3M adhesive tapes are also good options for applications requiring unique final designs (no exposed screws, clips, etc), new assembly methods, thinner structures and light weighting designs since they can virtually eliminate the need for mechanical fasteners. And, if that's not enough, 3M™ Electrically Conductive Transfer Tapes can be easily die cut and be hand or machine applied with little to no mess.

### Available Products

[3M™ Electrically Conductive Adhesive Transfer Tape 9712](#) (Acrylic Adhesive, <25 contact resistance, and carbon scrim)

[3M™ Electrically Conductive Adhesive Transfer Tape 9713](#) (Acrylic Adhesive, <10 contact resistance, and Nickel coated carbon scrim)

[3M™ Electrically Conductive Adhesive Transfer Tape 9711S](#) (Acrylic Adhesive, <0.3 contact resistance, and High adhesion, conductive fabric carrier)

[3M™ Electrically Conductive Adhesive Transfer Tape 9709SL](#) (Acrylic Adhesive, <0.3 contact resistance, and EMI shielding for enclosure designs, low contact resistance, SUS grounding)

[3M™ Electrically Conductive Adhesive Transfer Tape 9707](#) (Acrylic Adhesive, <0.3 contact resistance, and High adhesion version of 9709SL)