DIAMOND COATINGS

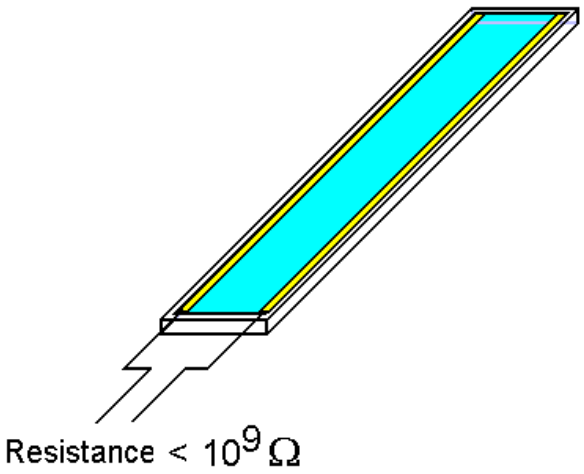
ITO for transparent Anti-static applications Datasheet

APPLICATION NOTE: INDIUM TIN OXIDE FOR TRANSPARENT ANTI-STATIC APPLICATIONS

ANTI STATIC REQUIREMENT

BS EN 50014:1993 section 7.3.2 'Electrical Apparatus for potentially explosive atmospheres' defines a suitable anti-static coating. This specifies that a test sample 100mm long and 10mm wide must have a resistance of less than 109 Ohms (1 Giga.Ohm). This 100mm x 10mm sample shape is 0.1 of a square. Diamond Coating's standard anti-static ITO coating has a sheet resistance of 500 Ohms/square. In this case the test sample resistance will be 0.1 x 500 = 50 Ohms. This is better than the statutory requirement of a resistance less than 109 Ohms by a factor of 20 million.

Figure : Anti-static resistance requirement



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SHEET RESISTANCE AND SURFACE RESISTIVITY

For anti-static applications it is common to use surface resistivity (often just termed resistivity). Surface resistivity is defined in standards such as IEC60093 or ASTM D257-93 (1998). IEC 60093 allows various measurement geometries for measuring the surface resistivity. One geometry detailed in the standard is a concentric ring electrode arrangement. The resistance is measured between two concentric rings and then a correction made for the geometry of the measurement (ref IEC 60093). This correction brings surface resistivity (measured in ohms) almost exactly back to sheet resistance (measured in ohms/square). The agreement is certainly better than the +/-10% referred to in IEC 60093 as a typical reproducibility (ref IEC 60093).

So, sheet resistance (Ohms/square) and surface resistivity (ohms) are just two conventions for specifying the same thing. There is no correction when swapping between these two conventions, for example a sheet resistance of 1000 ohms/square is equivalent to a surface resistivity of 1000 ohms.

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