DAG® 503 - 62%

Product Data Sheet

High Temperature Silver Conductive Coating

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Description: DAG 503 - 62% silver coating is a general purpose, flexible, high temperature, conductive material designed for a wide variety of uses. As supplied, it is suitable for direct application to most substrates, including plastics and elastomers, because of its air-dry characteristics.

The selection of unique resin system, combined with carefully treated silver, provides the optimum in high temperature conductive coatings. The air-dried films are resilient, highly conductive and resistant to humidity and most chemicals. In addition, they exhibit good resistance to ultraviolet radiation, oxidation and corona.

Advantages:

- Withstands ambient temperatures of over 260°C
- Resistance can be altered over a wide range by mixing with other DAG 500 series products.
- Remains flexible over temperature range of –40 to over 260°C
- Highly conductive
- Dries at room temperature
- Fair resistance to dilute acids and alkalis
- Good adhesion to substrates
- High resistance to humidity
- One component, supplied ready for use
- Easy to apply

Typical Applications

• Electrical terminations	• Component manufacture
• High Temperature EMI shields	• Microwave strip and control lines
• High temperature static bleeds	• Heating elements
• Fabric coatings	• Cable coatings
• Painted antennas	• Conductive contact material
• Printed circuits	• Tantalum capacitors

Typical Properties (as supplied)

- Pigment – specially treated silver 56%
- Binder – fluoroelastomer
- Carrier – methyl isobutyl ketone
- Diluent – butyl acetate, MEK or MIBK
- Color – silver
- Consistency – fluid
- Density – 14.6 lbs/gallon
- Solids content by weight – 18%
- Weight solids – 62%
- Viscosity – 1700 cps (5 min. shake, LVT #2 @ 12rpm)
- VOC – 5.63 lb/gallon
- Flash Point - 24°C
- Theoretical coverage 256 sq ft/gal @ 1 mil thickness

Typical Properties (as cured)

- Color – silver
- Service temperature - 275°C
- Volume resistivity – 127 x 10^{-6} ohm-cm
    - Specific resistance tests should be conducted prior to design.

Application Details

- **Surface preparation** – For maximum adhesion, be sure all surfaces are dry and free of contaminants, such as oil or chemical residues, before applying product. Porcelains and other smooth substrates can be wiped with solvents, such as acetone, and air-dried. Porous substrates, including materials coated with Aquadag® E, should be heated sufficiently after the solvent wipe to drive off any entrapped contaminants, solvents and moisture.
- **Mixing/Dilution –** Stir to ensure homogeneity before use. Electrodag 503 - 62% is supplied ready for brushing and roller applications. One or two parts of MEK by volume can be added to one part of the product for spraying, dip coating or impregnation. Use care when dipping plastics that can be affected by MEK. Before use, the material should be mixed thoroughly using a mechanical stirrer or paint shaker until it is of uniform consistency. Check to see that no sediment remains in the bottom of the container. Pour into suitable container for dilution.
- **Spray Application –** For small production work and prototypes, a suction cup gun may be used providing Electrodag 503 - 62% is thoroughly mixed prior to spray application. For intermediate production runs or many small parts, propeller-type attachments should be used on the suction gun to ensure coating uniformity. Full production is most efficiently handled with propeller-agitated pressure pot systems. **Note:** Handle E503 as you would a quality automotive lacquer. AVOID DRY SPRAY, as this will cause poor adhesion. To reduce overspray, use the minimum atomization

pressure required for adequate coverage. Further dilution of E503 may be desirable to improve product yield, since any overspray will contain less silver.

- **Drying –** Air-dry coated parts approximately 10 minutes (depending on humidity) before carrying out resistance checks. Coating air dries to touch in 30 seconds and is ready for use in 2 minutes. Passing the coated parts through infrared heat, or through batch or conveyor ovens can accelerate drying time for production operations. Before soldering on this coating, allow it to dry for 1 hour at room temperature, or 15 minutes at 150°C.
- **Cleaning equipment and parts –** E503 can be removed with MEK
- **Soldering of coatings –** E503 coatings can be soldered with a 60/40 resin core solder after pretinning at a low temperature. A 20 watt pencil tip soldering iron will provide best results. Dip soldering is best at a temperature of 195 to 210°C without a flux. When dip soldering, employ a 2% silver, 60/38 solder.

Storage / Shipping / Handling – Shelf life for this product is one year from date of shipment under original seal. Keep from freezing. Keep container tightly closed when not in use. Store in a cool, well-ventilated area. Keep away from heat, sparks, and open flame. Protect material from direct sunlight. Ground and bond containers when transferring materials. Empty containers may retain hazardous properties. Follow all MSDS and/or label warnings even after container is emptied.

Health and Safety – Flammable. Harmful if swallowed, inhaled or absorbed through skin. May cause eye irritation. Wash thoroughly after handling. Keep away from heat, sparks, and open flame. Keep container tightly closed when not in use. Use with adequate ventilation. Avoid breathing vapor. Fluoroelastomers decompose slowly above 204°C and emit small amounts of toxic vapors.