

Acheson (Japan) Limited  
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## Electrodag 423SS

### Graphite Based Polymer Thick Film Ink

**Description:** Electrodag 423SS is conductive screen printable ink consisting of finely divided graphite particles dispersed in a thermoplastic resin. Designed for use in membrane switches and flexible circuitry, Electrodag 423SS provides excellent adhesion to polyester and a stable electrical resistance. Because of its environmental stability, Electrodag 423SS can be used as a protective coating over silver inks to reduce the chance of silver migration and sulfur attack.

Electrodag 423SS can be used by itself or blended with Electrodag 427SS (silver). Blending allows significant savings in applications that do not require the low electrical resistance of silver alone.

**Typical Applications:** Membrane Switches  
 Flexible Circuitry  
 Printed Resistors  
 Heating Elements

**Advantages:**

- Stable electrical resistance
- Blendable with Electrodag 427SS or SS 24210 for custom resistance matching.

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|--|--|---|
| <b>Typical properties<br/>(of wet product)</b> | Pigment  | : graphite  |
|  | Binder   | : vinyl resin   |
|  | Color  | : black   |
|  | Viscosity  | : 30,000~70,000 mPa.s<br>(#7 spindle 20 rpm Brookfield RVT)   |
|  | Density  | : 9.4 lb/gal (1.13 kg/l)                                      |
|  | Solids content   | : 36%   |
|  | Flash point  | : 165°F (74°C)<br>(Pensky-Martens closed tester, ASTM D93-71) |
|  | Shelf life   | : 24 months from date of qualification<br>under original seal |
|  | VOC  | : 727 g/l (6.1 lb/gal)  |
|  | <b>(as cured)</b>  | (@ 30 min. 160°F/71°C on polyester film)                      |
| Coverage                                       | : 370 sq ft/gal @ 1 mil<br>(8.07 m <sup>2</sup> /kg @ 25 μm) |   |
| Sheet resistance                               | : < 42.0 ohms/sq @ 1 mil                                     |   |
| Max. service temp.                             | : 220°F (104°C) continuous                                   |   |
| Pencil hardness                                | : H  |   |

**Method of Use:****Mixing and Application**

Electrodag 423SS does not require stirring prior to use. Stirring will temporarily reduce the viscosity and may limit the thickness that can be applied per pass.

This product is applied by standard screen printing techniques.

Many factors influence the dried film thickness and the final resistance obtained. These include snap-off distance, screen mesh size, squeegee material, screen material, and emulsion thickness.

Recommended thickness : 0.5 to 1.0 mil (13-25 $\mu$ m) dried  
Emulsion thickness : use 2.5 to 4.0 mil (64-102 $\mu$ m)  
solvent-resistant emulsion  
Screen type and mesh : monofilament polyester--157 to 250 mesh  
stainless steel--165 to 300 mesh  
Squeegee : polyurethane or other solvent resistant  
material--  
60 durometer for polyester screens  
70 durometer for stainless steel screens

**Recommended Drying Procedures**

Electrodag 423SS can be printed and immediately baked for 30 minutes at 160°F (71°C). Depending on the substrate and airflow, less time may be required to fully dry. Electrodag 423SS may be baked for 15 minutes at 200°F (93°C) or 5 minutes at 250°F (121°C), but slightly higher electrical resistances may be produced. Electrodag 423SS may also be cured by infrared.

**Thinning and Cleanup**

This product is supplied ready for use. Should thinning become necessary, use butyl cellosolve acetate; to retard, use carbitol acetate. To clean screen and equipment, use MEK, MIBK, acetone, or similar solvents.

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**Storage:** Store Electrodag 423SS at temperatures between 41°-86°F (5°-30°C).

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**Precautions:** This product contains butyl cellosolve acetate. Harmful if swallowed, inhaled, or absorbed through skin. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Keep container tightly closed when not in use. Use with adequate ventilation. Avoid breathing vapor. (See Acheson Material Safety Data Sheet for current safety and first aid instructions.)

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**Note:** Electrodag is a registered trademark of Acheson Industries, Inc.

The data contained on this sheet represents typical properties and is not to be used as a basis for specifications. Contact Export Department, Acheson (Japan) Limited, 825, Kitano, Noguchi-cho, Kakogawa 675-0011, (+81-794-26-2298), before writing specifications on this product.

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