



# Electro-Science Laboratories, Inc.

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## POLYMER PROTECTIVE COATING

**242-S**  
**242-SB**  
**242-SB/FL**

ESL 242-S (Yellow), 242-SB (Blue), and 242-SB/FL (Blue) are screen printable, mineral-filled epoxy coatings which are extremely solvent resistant when properly cured, even to harsh solvents and under high pressure. The 242-SB/FL is a higher viscosity material capable of printing 125 micrometer lines and spaces with sharp edges. These materials are thermosetting and can be cured for 10 to 30 minutes at 150°C. Solvent resistance is improved with longer curing times. Lower temperature cures are possible. The materials can be used to protect cermet circuits on alumina or porcelain enameled steel. They can be also used as crossovers or multilayer dielectrics in additive polymer thick film circuits. The ESL 242 Series is compatible with ESL thermosetting polymer silvers such as 1109-S and 1107-S on PC boards. Because the cured film is hard, these materials are not recommended for repeated flexing or for use on flexible substrates.

## PASTE DATA

<b>RHEOLOGY:</b>	Thixotropic, screen printable paste	
<b>VISCOSITY:</b> (Brookfield RVT, ABZ Spindle, 10 rpm, 25.5°C±0.5°C)	<b>242-S, 242-SB</b>	85±15 Pa·s
	<b>242-SB/FL</b>	140±40 Pa·s
<b>COLOR:</b>	<b>242-S</b>	Yellow
	<b>242-SB, 242-SB/FL</b>	Blue
<b>SHELF LIFE: (25°C)</b>		6 months

## PROCESSING

<b>SCREEN MESH/EMULSION:</b>	<b>242-S, 242-SB</b>	200/30.5 µm
	<b>242-SB/FL</b>	325/25 µm

242-S, SB, FL 9806-D

### ESL Affiliates

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See Caution and Disclaimer on other side.

<b>SCREEN CLEANING:</b>	Use cellosolve acetate or BCA, followed by acetone (Note 1)
<b>LEVELING TIME:</b>	5-10 minutes
<b>DRYING AT 125°C:</b>	10-15 minutes
<b>CURING:</b> (Note 2)	125°C for one hour, or 150°C for 30 minutes
<b>THINNER:</b>	ESL 402, or BCA

## TYPICAL PROPERTIES

<b>THICKNESS:</b>		63.5±10 µm
<b>DIELECTRIC CONSTANT (K):</b> (1 kHz, 25°C)	<b>242-S</b>	9-13
	<b>242-SB</b>	6-10
	<b>242-SB/FL</b>	6-10
<b>DISSIPATION FACTOR:</b> (1kHz, 25°C)		≤0.75%
<b>INSULATION RESISTANCE:</b> (50 V DC)		≥10 <sup>11</sup> Ω
<b>BREAKDOWN VOLTAGE:</b> (25°C in air)		≥ 500 V/ 63.5 µm

## CURING CONDITIONS & SOLVENT RESISTANCE TEST RESULTS

	Gasohol (85% gasoline, 15% methanol) Vapor phase: 48°C	100% methanol Vapor phase: 64°C	Glass Cleaner (water/ethanol/detergent mixture) Liquid phase: 70°C, 30 minutes
<u>Cure Time</u>	<u>100 hours</u>	<u>100 hours</u>	
150°C, 30 minutes	good*	good	film peel
150°C, 45 minutes	good	Good	good
150°C, 60 minutes	good	Good	good

\* Good = no film peel, no blisters

**Note 1:** Follow manufacturer's recommended safety precautions when using these solvents or any other solvent.

**Note 2:** A longer curing time at 150°C (up to 2 hours) improves solvent resistance. Alternatively, higher temperatures for shorter times may be used, although 242-S may experience a slight color darkening at 200°C.

242-S, SB, FL 9806-D

**CAUTION:** Proper industrial safety precautions should be exercised in using these products. Use with adequate ventilation. Avoid prolonged contact with skin or inhalation of any vapors emitted during use or heating of these compositions. The use of safety eye goggles, gloves or hand protection creams is recommended. Wash hands or skin thoroughly with soap and water after using these products. Do not eat or smoke in areas where these materials are used. Refer to appropriate MSDS sheet.

**DISCLAIMER:** The product information and recommendations contained herein are based on data obtained by tests we believe to be accurate, but the accuracy and completeness thereof is not guaranteed. No warranty is expressed or implied regarding the accuracy of these data, the results obtained from the use hereof, or that any such use will not infringe any patent. Electro-Science assumes no liability for any injury, loss, or damage, direct or consequential arising out of its use by others. This information is furnished upon the condition that the person receiving it shall make their own tests to determine the suitability thereof for their particular use, before using it. User assumes all risk and liability whatsoever in connection with their intended use. Electro-Science's only obligation shall be to replace such quantity of the product proved defective.