



# Electro-Science Laboratories, Inc.

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## CERMET PLATINUM CONDUCTOR

# 5545

### For Heating Elements and Sensors

ESL 5545 is a screen printable, dense, fritted platinum coating designed for use with partially stabilized zirconia for oxygen sensors. It can also be used on alumina for semiconducting tin oxide sensors for the detection of gases like CO or hydrocarbons. As a sensor, its change in resistance is linear over the temperature range of  $-50$  to  $500^{\circ}\text{C}$ . ESL 5545 is suitable for use as a heating element and is stable at  $600^{\circ}\text{C}$  in  $\text{H}_2$ -containing atmospheres without significant degradation of adhesion (when fired at  $1300^{\circ}\text{C}$ ). Excellent performance, on prefired ceramics, is obtained when fired at temperatures of  $850^{\circ}\text{C}$  to  $1300^{\circ}\text{C}$ .

#### PASTE DATA

<b>RHEOLOGY:</b>	Thixotropic, screen printable paste
<b>VISCOSITY:</b> (Brookfield RVT, ABZ, spindle, 10 rpm, $25.5^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ )	200-250 Pa·s
<b>PLATINUM CONTENT:</b>	64-67% by weight
<b>SOLIDS CONTENT:</b>	77-79% by weight
<b>BONDING MECHANISM:</b>	Fritted
<b>SHELF LIFE:</b>	6 months

#### PROCESSING

<b>SCREEN MESH / EMULSION:</b>	325/25 $\mu\text{m}$
<b>LEVELING TIME:</b>	5-10 minutes
<b>DRYING AT <math>125^{\circ}\text{C}</math>:</b>	10-15 minutes
<b>FIRING RANGE:</b>	$850^{\circ}\text{C}$ - $1300^{\circ}\text{C}$
<b>OPTIMUM:</b>	$980^{\circ}\text{C}$
<b>TIME AT PEAK:</b>	15 minutes
<b>RATE OF ASCENT / DESCENT:</b>	$60^{\circ}\text{C}$ - $100^{\circ}\text{C}/\text{minute}$
<b>SUBSTRATE OF CALIBRATION:</b>	96% alumina

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#### ESL Affiliates

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See Caution and Disclaimer on other side.

## TYPICAL PROPERTIES

<b>RESISTIVITY:</b> (8-14 $\mu\text{m}$ )	45-110 $\text{m}\Omega/\text{sq.}$
<b>APPROXIMATE COVERAGE:</b>	80-100 $\text{cm}^2/\text{g}$
<b>SOLDERED ADHESION:</b> (2.5 mm x 2.5 mm pads, 62 Sn/36 Pb/2 Ag solder, on zirconia)	> 50 N

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**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.

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