



ESL ELECTROSCIENCE

CERAMIC TAPES &
THICK-FILM MATERIALS

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POLYMER RESISTOR SERIES

RS15100 RS15100-P

RoHS Compliant*

GENERAL

The ESL RS15100 and RS15100-P resistor systems are thermosetting resin compounds that are applied by screen-printing. Curing produces carbon-based resistors with stability and tolerances suitable for many electronic applications. A variety of substrates may be used including phenolic, glass-epoxy, and other pc-board materials, ceramic, glass, and high temperature polyimide materials.

PRINTING

The RS15100 Series and RS15100-P Series are designed to be screen-printed using stainless steel screens. Typically 150 - 200 mesh screens with 25 micrometer emulsion are used to give a cured thickness of 16 to 20 micrometers. For viscosity adjustment for screen-printing, use ESL 402 thinner.

CURING

Curing of these materials may be done in a well-ventilated box oven or conveyor furnace. The standard box oven calibration cure is indicated in the table.

STABILITY CONSIDERATIONS

There is a wide range of time-temperature combinations, which can be used to cure the resistor paste. Each set of curing conditions employed has a somewhat different target of ultimate sheet resistivity. The users must choose for themselves the optimum heat treatment required for their particular application.

To obtain maximum stability for cured resistors, it is important to advance the degree of cure as far as possible along the curing curves, prior to using or testing the resistors. Thus, if only short times are available for curing, one should use the highest consistent with the stability of the other elements present (e.g., substrates, termination, materials, etc.).

The choice of calibration, time and temperature is arbitrary and simply allows for the reproduction of manufacturing and testing conditions. They are not chosen for the purpose of obtaining the best performance and indeed they are not recommendations for the customer's actual choice.

The customer should choose the conditions that give the lowest possible sheet resistivity for any polymer paste series if maximizing thermal and power stability are the primary objectives.

ESL Europe RS15100, RS15100-P 0909-B

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See Caution and Disclaimer on other side.

APPLICATIONS

The RS15100 Series is used primarily to produce resistors on polyester (Mylar®) or polyimide (Kapton®) flexible films that can withstand cure cycles in the 135 - 200 °C range.

The RS15100-P Series is a version of the RS15100 Series designed for the manufacture of potentiometers. It may be used on the same films as the RS15100 Series or on printed circuit board materials, glass, or ceramic.

RS15100 / RS15100-P CHARACTERISTICS

| TYPICAL PROPERTIES | RS15100 | RS15100-P |
|--|----------------------------|----------------------------|
| Viscosity, Pa-s | 80 ± 20 | 80 ± 20 |
| Shelf Life, 5°C | 6 months | 6 months |
| Resistivity Ranges | | |
| <u>Ohms/square</u> | | |
| 10 | RS15111 | RS15111-P |
| 100 | RS15112 | RS15112-P |
| 1 K | RS15113 | RS15113-P |
| 10 K | RS15114 | RS15114-P |
| 100 K | RS15115 | RS15115-P |
| 1 M | RS15116 | RS15116-P |
| Resistivity Tolerance, % with calibration cure | ± 25% | ± 25% |
| Thinner | 402 | 402 |
| Drying | 100 - 125 °C, 10 - 15 min. | 100 - 125 °C, 10 - 15 min. |
| Calibration Cure | 150 °C, 2 hours | 150 °C, 2 hours |
| Cured Thickness | 18 ± 2 µm | 18 ± 2 µm |
| Cure Temperature, Range | 135 - 200 °C | 135 - 200 °C |
| Standard Terminations | 1109-S | 1109-S |

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*None of the six substances referred to in the RoHS Directive (2002/95/EC) are used in the formulation of this product.

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 vapours 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. ElectroScience 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 his own tests to determine the suitability thereof for his particular use, before using it. User assumes all risk and liability whatsoever in connection with his intended use. ElectroScience's only obligation shall be to replace such quantity of the product proved defective.