



## ESL ELECTROSCIENCE

CERAMIC TAPES &  
THICK-FILM MATERIALS

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## COPPER CONDUCTOR

# 2323 2323-HV

### RoHS Compliant\*

ESL 2323 is a 72% Ag / 28% Cu fluxless and frit-less eutectic brazing alloy available in paste form, suitable for screen printing, and syringe application. Typical uses are for joining metal parts to moly-manganese or nickel-metallised ceramic, package fabrication, and making high-temperature interconnects for SOFC and other fuel cells, where the joint will see temperatures greater than the melting point of soft solders. The metal parts should be nickel plated for best results.

ESL 2323-HV is a higher viscosity version of 2323 and is designed to provide better printing definition and for syringe application.

### PASTE DATA

<b>Rheology:</b>	Thixotropic, screen-printable paste	
<b>Viscosity:</b> (Brookfield RVT, 10rpm, ABZ spindle, 25.5 ± 0.5 °C)	2323	65 ± 5 Pa.s
	2323-HV	80 ± 5 Pa.s
<b>Solids:</b>	2323	93 ± 1 %
	2323-HV	94 ± 1 %
<b>Shelf Life (20 - 25 °C):</b>		6 months

### PROCESSING

<b>Screen Mesh, Emulsion:</b>	200 - 325 S/S, 25 µm
<b>Levelling Time (at 20 °C):</b>	5 - 10 min
<b>Drying Time (at 125 °C):</b>	10 - 15 min
<b>Firing Temperature Range:</b>	810°C spike, 10 -20 seconds
<b>Brazing Atmosphere:</b>	Wet hydrogen, forming gas, cracked ammonia
<b>Melting Point (Eutectic):</b>	779°C

#### Compatibility:

Can be brazed to moly-manganese or hydrogen-fired thick-film nickel (e.g., ESL 2505-H2). Not compatible with most air-firing thick-film metallisations, since this process will cause lower adhesion of the metallization when exposed to reducing atmospheres at high temperatures.

ESL Europe (KOP) 2323 & 2323-HV 0403-C

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See Caution and Disclaimer on other side.

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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.

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