



**ESL EUROPE**

SOLDER PASTES &  
THICK-FILM MATERIALS

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## OPTIFLO™ Series

## NO CLEAN SOLDER PASTE

## H-SERIES

A paste family suitable for high performance fine pitch applications, developed by ESL Europe to give the widest possible process window for general-purpose surface mount applications. OptiFlo™ H series solder pastes are available in several alloys with a range of flux chemistries, rheology and solids options allowing ESL to engineer the OptiFlo™ H series solder pastes to meet your specific needs.

Features	Benefits
<b>Fine pitch printing at 0.4mm or less</b>	- suitable for all SMT designs
<b>Long screen and tack life</b>	- improved process window
<b>No slump at ambient (15-25°C)</b>	- improved process window
<b>No hot slump at 150°C</b>	- improved process window
<b>Reduction in mid chip beading</b>	- less rework/wider process window
<b>Low volume residues</b>	- optimised inspection
<b>Clear residues</b>	- excellent cosmetics
<b>Reduced viscosity/temp change</b>	- improved process window
<b>Low VOC content: (less than 1%)</b>	- minimal environmental impact
<b>Refrigeration possible</b>	- extended shelf life.

### The OptiFlo™ Series options:

**H-2** Outstandingly long stencil and screen life, developed to minimise the tendency to "dry out" on the stencil, plus a very long wet tack life. Added benefits include a wide application process window and good hot slump resistance. Suitable as a no-clean or cleanable solder paste and available in a range of viscosities, High (HV), Medium (MV) and Low (LV), so ESL can meet your optimum processing requirements.

**H-5 LS** Low solids residue, no clean flux residue with superb cosmetics that are clear and non-sticky. Yet can be penetrated by test probes for ATE. Good stencil life, withstanding high temps up to 32°C. Outstanding tack life for delayed printing. Excellent delayed reflow performance 48 hrs after printing.

**H-K** Lower viscosity, typically 700 – 750 kCpS, excellent rheology. Suitable for conventional and high speed printing including closed head pressure printing systems coupled with a wide application process window for conventional printing.

Further developments are continually evolving. Contact ESL Europe for latest news and improvements

ESL Europe OptiFlo Series 0507-G

#### ESL Worldwide

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See Caution and Disclaimer on next page.

## PASTE DATA

<b>Solder Alloy:</b> (Meets national & international specifications)	62% Sn / 36% Pb / 2% Ag 63% Sn / 37% Pb Others available on request
<b>Particle Size:</b>	-325 / +500 mesh (45 - 20 microns) Others available on request
<b>Viscosity:</b> (Brookfield TF Spindle, 5 rpm, 25.5°C ± 0.5 °C)	Can be engineered to suit most applications Typically in the range 600 – 1000 Pa.s
<b>Solids:</b>	Typically in range 88 - 90.5 %
<b>Slump:</b> (ambient 10 - 25 °C)	No loss of definition at 0.4 mm pitch
<b>Hot Slump:</b> (at 150 °C)	No loss of definition at 0.4 mm pitch
<b>Shelf Life:</b> (15 °C - 25 °C) (Refrigerated)	Ambient, typically 3 months Refrigerated up to 6 months

## TYPICAL PROPERTIES

(175 ± 25 µm wet print thickness)

<b>Approximate Coverage:</b>	12.5 cm <sup>2</sup> / g
<b>Printing Resolution:</b> (line / space)	Better than 0.400 mm / 0.400 mm
<b>Screen time:</b>	Up to 10 hours
<b>Tack Time:</b>	Up to 72 hours
<b>Packaging:</b>	250 - 1000 grams in jars 500 - 1000 grams in cartridges

## PROCESSING

<b>Screen Mesh, Emulsion:</b>	80 S/S, 150 - 200 µm
<b>Stencil Material, Thickness:</b>	laser cut, nickel formed, etched S/S, 150 - 200 µm
<b>Reflow Temperature:</b>	Standard reflow profiles used for RMA pastes are appropriate. Although this paste is designed to be reflowed in air, it may also be reflowed in N <sub>2</sub> .
<b>Flux Removal:</b>	Not required. Note: If cleaning is desired; residue can be removed using standard flux solvent or saponifier cleaning methods.
<b>Thinner:</b>	Not recommended

## RESIDUE PERFORMANCE DATA:

Test	Specification	Result
<b>Silver Chromate Paper Test:</b> (Test for Halides)	J-STD-004 / IPC-TM-650	Pass
<b>Copper mirror Test:</b>	J-STD-004 / IPC-TM-650	Pass
<b>Surface Insulation Resistance:</b>	J-STD-004 / IPC-TM-650	Pass
<b>Electro-migration:</b>	J-STD-004 / IPC-TM-650	Pass

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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 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.