



SOLDERING

# ECOREL™ SP-16LVD

Sn63Pb37 LEADED SOLDER PASTE  
NO CLEAN SMT PRINTING PROCESS  
LOW VOIDING

## BENEFITS

ECOREL SP-16LVD is especially designed to reduce the dimension and amount of voids in SMT applications where leaded paste is still allowed to be used. This is especially beneficial when soldering bottom terminated components and for applications where excellent thermal management is crucial. A reduction of voids contributes to a better heat dissipation, more reliable electrical connection and a better intermetallic solder joint strength.

It's a no-clean solder paste combining the metallurgical properties of a Sn63Pb37 alloy with high performance chemistry of the ECOREL™ 16LVD range.

This solder paste is furthermore well balanced in terms of wettability, reliability, good compatibility with most conformal coating in the market and has transparent clear residues.

PERFORMANCE	<ul style="list-style-type: none"> <li>Low voiding to offer improved heat dissipation</li> <li>Transparent colorless residue, even after multiple reflow cycles</li> <li>Very good wetting on all surface finishes, including OSP</li> <li>Accurate printing</li> <li>Excellent compatibility with conformal coatings</li> </ul>
COST	<ul style="list-style-type: none"> <li>Minimizes line-down time &amp; the need for re-work</li> <li>Increase lifetime and reliability of your product, hence reduces risk of premature failures</li> </ul>
HSE	<ul style="list-style-type: none"> <li>Attention: Leaded paste</li> <li>No CMR containing substances in flux media</li> <li>No halogen</li> </ul>

## FEATURES

SPECIFICATIONS	ECOREL SP-16LVD 89.5T4	ECOREL SP-16LVD 89.0T5
Alloy	Sn63Pb37	Sn63Pb37
Melting point (°C/°F)	178°C/383°F	178°C/383°F
Metal content (%)	89,5 +/- 0,5	89 +/- 0,5
Post reflow residues	Approximately 6% by w/w	Approximately 6% by w/w
Halogen content	No Halogen	No Halogen
Powder size	20-38 microns / Type 4	15-25 microns / Type 5
Spiral pump* Viscosity (Pa.s 25°C)	**Typical 135	**Typical 135

\*The equipment used to test spiral pump viscosity is Malcom at a 10 rpm rotation speed.

\*\*Slight adjustments in viscosity possible after finalizing full industrialization test procedure.

The 16LVD chemistry of this product is also available with other alloys or particle sizes on request.

## CHARACTERISTICS

CHARACTERISTICS	VALUES	METHOD
Flux Classification	ROLO	ANSI/J-STD-004
	113	ISO 9454
Solder balling test	Pass	ANSI/J-STD-005
Copper mirror	Pass	ANSI/J-STD-004
Copper corrosion	Pass	ANSI/J-STD-004
SIR (IPC)	Pass	ANSI/J-STD-004
SIR (Bellcore)	Pass	Bellcore
Electromigration (IPC / Bellcore)	Pass	ANSI/J-STD-004 / Bellcore

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## PROCESS RECOMMENDATION

The best process will depend on factors such as operating conditions, equipment, board or component design. Our team is ready to advise you.

### SOLDER PASTE PREPARATION

- Put the paste at room temperature for at least 4 hours prior to use.
- Before printing, it is essential to properly mix the solder paste, either manually with a spatula or by doing several preliminary prints on the stencil.
- Automatic solder paste mixing is neither required nor advised.

### PRINTING GUIDELINE

Apply the solder paste to the stencil to form a roll of 1 to 2 cm in diameter all along the squeegee or around 100g per 10 cm of squeegee length. This way, the solder paste will roll easily under the squeegees to offer excellent printing quality.

PARAMETER	REMARK
Printing speed	Minimum 20 to maximum 80 mm/s (1 to 3 inch/s) Maximum depends on printer capabilities
Minimum pitch	0.3 mm for Type 5 powder
Pressure	Guideline value for a 250 mm squeegee is 7 Kg at 100 mm/s Actual value depends on equipment, printing speed and squeegee length
Stencil life in continuous printing process	>10 hours
Abandon time between prints	>2 hours
Steady tackiness	>12 hours

### REFLOW GUIDELINE

Although this paste performs very well under air, a nitrogen atmosphere will even more improve the wettability whereas achieving even a larger reflow process window.

Linear preheating ramp rate is recommended, however high-density boards may require a soak zone during preheating to stabilize the temperature over the circuit board before peak reflow.

REFLOW STEPS	REMARKS
Preheating ramp rate with linear preheating	0.7 to 1.2°C/s (according to the circuit board size and density)
Preheating steps in case of preheating soak zone	<ul style="list-style-type: none"> <li>From 20 to 150°C/68 to 302°F ramp rate 1 to 2°C/s</li> <li>Soak zone between 150 to 180°C/302 to 356°F: 30-140s reflow</li> <li>Above 170°C/338°F to liquidus 1-2°C/s</li> </ul>
Peak ramp rate	1 to 2 °C/s
Peak temperature	210 – 235°C/435 to 455°F for full lead profile Above 217°C/423°F for backward profile
Time above liquidus	50 to 120s
Cooling ramp rate	1.8 to 7°C/s

## CLEANING POST SOLDERING

This product is a no-clean solder paste, so cleaning is not required to meet IPC standards. The chemistry is specially designed so that any remaining flux residue is chemically inert and will not impact your assembled board or packaging under normal conditions. However, when cleaning is desired or required (e.g., high reliability assembly or to improved conformal coating adhesion), the flux residue can be easily removed with INVENTEC’s own formulated flux cleaners.

*Inventec has over 60 years’ experience in high-tech cleaning for aqueous and solvent based systems.  
Our solder materials are aligned with our cleaning solutions, which guarantees excellent cleaning.*

PROCESS TYPE	PCBA DEFLUXING SOLUTIONS
Manual	Quicksolv™ DEF90, Quicksolv™ DEF70, Promoclean™ TP61
Aqueous (Immersion or spray)	Promoclean™ DISPER 607, Promoclean™ DISPER 707, Promoclean™ DISPER 800
Co-solvent	Topklean™ EL 80 + Promosolv™ rinsing solvents
Mono-solvent (vapor phase)	Promosolv™ 70ES, Promosolv™ 70IS

Other products available, depending on specific customer requirements. Also check our maintenance cleaning solutions.

## PACKAGING, STORAGE & SHELF LIFE

- To ensure the best product performance, the recommended storage temperature range is from 0°C to 10°C.
- Shelf-life is 12 months for jar packaging.

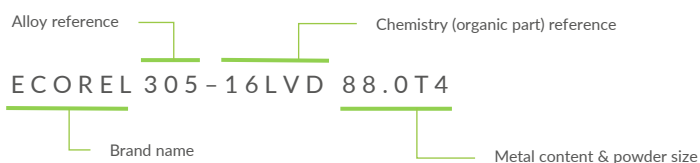
### AVAILABLE PACKAGING



JAR  
250g & 500g

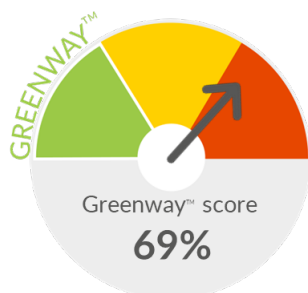
### PRODUCT ARTICLE CODIFICATION

Below example as a reference



## HEALTH, SAFETY & ENVIRONMENT

ECOREL SP-16LVD is **NOT** a **GREENWAY** product. Due to the toxic nature of lead, solder paste with lead will never qualify as a Greenway paste. Lead solder paste is still allowed to be sold for some particular industries and applications. More info on our Greenway concept via this [link](#).



### LOOKING FOR A MORE SUSTAINABLE SOLUTION?

#### GREENWAY ALTERNATIVE

- We currently don't have a Greenway alternative but our target is to develop one in the near future. In case you want us to prioritize the development of a Greenway alternative, do not hesitate to contact us.

Contains lead! Use in well-ventilated areas. Safety glasses and gloves should always be worn when handling the paste. No issues when used as recommended.

Please refer always to the Safety Data Sheet (SDS or MSDS) prior to use. Our SDS can be downloaded at [www.quickfds.com](http://www.quickfds.com). We will request to provide your email address, so we can automatically send you a new version of the SDS when a future update would occur.

## TECHNICAL SUPPORT & FREE-OF-CHARGE TESTING

Inventec has a worldwide dedicated Technical Support team to help you along the various stages of our cooperation.

Depending on your request, we provide online or onsite support

- to select the right product based on your specific needs.
- to assist you in your product qualification process.
- to guide you with the initial set up of your process at all your worldwide manufacturing facilities.
- to provide fast response on technical issues which could occur at any time during mass production.

When prior cleaning is required, customers are also welcome in our CLEANING CENTERS to see the process in action and to get convinced by our solutions. We cover water and solvent based processes.

Inventec is unique in the world by developing not only soldering materials but also cleaning and coating solutions. These materials are very closely linked with each other from a process point of view. Talking to our Technical Team, who understands very well these 3 different product groups, will help you greatly to overcome technical challenges within your overall process.

Contact our technical support via [contact@inventec.dehon.com](mailto:contact@inventec.dehon.com) or your local sales representative.

## ABOUT INVENTEC

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Inventec is a global provider of SOLDERING, CLEANING, COATING, COOLING materials for Electronic, Semiconductor and Industrial applications. For over 60 years we have shown leadership in innovation by putting HEALTH IMPACT, SUSTAINABILITY and RELIABILITY at the core of our product development.

With ISO 9001 & 14001 production sites in France, Switzerland, USA, Mexico, Malaysia and China we can guarantee a smooth and cost-effective supply chain.

We supply to many industries but the excellent performance of our products in applications which demand high reliability, leads us to focus especially on the AUTOMOTIVE, AEROSPACE, SEMICONDUCTOR, ENERGY and MEDICAL industry.

[www.inventec.dehon.com](http://www.inventec.dehon.com)



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This data is based on information that the manufacturer believes to be reliable and offered in good faith. In no event will INVENTEC PERFORMANCE CHEMICALS be responsible for special, incidental and consequential damages. The user is responsible to the Administrative Authorities (regulations for the protection of the Environment) for the conformity of his installation.

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