



SOLDERING

ECOREL™ HT 301T

HIGH LEAD Pb93,5Sn5Ag1,5 SOLDER PASTE
NO CLEAN PRINTING PROCESS
LOW VOIDS & HIGH RELIABILITY

BENEFITS

ECOREL HT 301T is a No-Clean solder paste with high lead content (Pb93,5Sn5Ag1,5), designed for power semiconductors and high temperature assembly of micromodules and embedded systems. Formulated in order to achieve very low levels of voiding, especially for power components (QFN, DPAK, etc.) and to remove easily the flux residues when post reflow cleaning is required.

ECOREL™ HT 301T exhibits also high speed printing and excellent abandon time performance.

PERFORMANCE	<ul style="list-style-type: none"> Low void level to improve heat dissipation Very good wetting on NiAu, Ni, NiP, and Cu lead frames Easy-to-clean flux residues
COST	<ul style="list-style-type: none"> Increase lifetime and reliability of your product, hence reduces risk of premature failures. Fast paste-printing speed
HSE	<ul style="list-style-type: none"> No CMR containing substances No Halogen

FEATURES

SPECIFICATIONS	ECOREL HT 301T T3
Alloy	Pb93,5Sn5Ag1,5
Melting point (°C/°F)	296-301°C/565-574°F
Metal content (%)	90
Post reflow residues	Approximately 3% by w/w
Halogen content	No Halogen
Powder size	25 – 45 microns / Type 3
Spiral pump* Viscosity (Pa.s 25°C)	Typical 75

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

CHARACTERISTICS

CHARACTERISTICS	VALUES	
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

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 150 mm/s (1 to 6 inch/s) Maximum depends on printer capabilities
Minimum pitch	0.4 mm for Type 3 powder
Pressure	Actual value depends on equipment, printing speed and squeegee length
Stencil life in continuous printing process	>8 hours
Abandon time between prints	>4 hours
Steady tackiness	>16 hours

REFLOW GUIDELINE

As high reflow temperatures are required, inert atmosphere by use of forming gas or nitrogen and short thermal profiles are recommended to preserve component integrity and to improve the wetting performance.

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

When reflow under vacuum is applied, voids level can be reduced to less than 5%.

REFLOW STEPS	REMARKS
Preheating ramp rate with linear preheating	1 - 2.5°C/s (33 - 36°F/s) for convection oven 2 - 4°C/s (36 - 39°F/s) for forming gas oven
Peak ramp rate	1 - 2 °C/s (33 - 35,5°F/s)
Peak temperature	320-360°C (608-680°F) is optimum
Time above liquidus	15 to 60s - 30 to 60s for convection oven
Cooling ramp rate	1.8 to 7°C/s (35 to 45°F/s)

CLEANING POST SOLDERING

ECOREL HT 301T 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. ECOREL HT 301T shows excellent cleanability with solvent based cleaning processes.

Inventec has more than 40 years experience in high-tech cleaning for aqueous and solvent based systems. Our solder materials are aligned with our cleaning solutions, providing you a guaranteed cleaning result with our materials.

PROCESS TYPE	PCBA DEFLUXING SOLUTIONS
Manual	Quicksolv™ DEF90 EL
Aqueous system (Immersion or spray)	Promoclean™ DISPER 607
Co-solvent system	Topklean™ EL 20P or EL 20A + HFE bases solvents
Mono-solvent (Azeotropic)	Promosolv™ 70ES

Other products available, depending on specific customer requirements. Check also 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

HEALTH, SAFETY & ENVIRONMENT

Contains lead – Use with protective gloves.

No issues when used as recommended.

In accordance with the Annex II of Directive 2011/65/UE (RoHS), including its amendments, we certify that this product does not contains quantities above 0.1% of Hg, Cr VI, PBB, PBDE, DEHP, BBP, DBP, DIBP and above 0.01% of Cd. . INVENTEC PERFORMANCE CHEMICALS also fulfils its direct obligations under the REACH and Conflict Mineral regulations.

Please refer always to the Safety Data Sheet (SDS or MSDS) prior to use. Our SDS can be downloaded at 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 different 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 you 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 or your local sales representative.

ABOUT INVENTEC

Inventec is a global provider of SOLDERING, CLEANING & COATING materials for Electronic, Semiconductor and Industrial applications. For over 40 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.

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S O L D E R I N G • C L E A N I N G • C O A T I N G

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.

Inventec Performance Chemicals – 26 rue de Coulons. 94360 Bry-sur-Marne, France
Limited company with capital of 600 000€ - 964 500 706 RCS Créteil