



SOLDERING

# ECOREL™ FREE 305-31A

SAC305 SOLDER PASTE  
NO CLEAN SMT PRINTING PROCESS  
EXCELLENT LOW VOIDING FOR DCB

## BENEFITS

ECOREL FREE 305-31A is especially designed to minimize flux spattering, solder leaking and voiding to achieve consistent bond-line thickness (BLT) between the large chips and the DCB substrate. Oxide layer formation on copper surfaces causing color change is efficiently inhibited to achieve a shiny surface with nice surface cosmetics.

PERFORMANCE	<ul style="list-style-type: none"> <li>Low voiding to achieve consistent bond line thickness</li> <li>Very good wetting, especially on copper surfaces</li> <li>Low flux spattering &amp; low residue spread</li> </ul>
COST	<ul style="list-style-type: none"> <li>Minimized copper oxidation for higher first-pass yield</li> <li>Minimized risks for wire-bonding defects</li> </ul>
HSE	<ul style="list-style-type: none"> <li>Lead Free</li> <li>No halogen</li> <li>Free of CMR containing substances</li> </ul>

## FEATURES

### STANDARD OPTIONS

SPECIFICATIONS	ECOREL FREE 305-31A
Alloy	Sn96,5Ag3Cu0.5
Melting point (°C/°F)	217°C/422°F
Metal content (%)	89 +/- 0,5
Post reflow residues	Approximately 5% by w/w
Halogen content	No Halogen
Powder size	25-45 microns / Type 3
Spiral pump* Viscosity (Pa.s 25°C)	Typical 145

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

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

## 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
Bono Corrosion test (85°C / 85% HR - 15 days)	Pass Corrosion Factor <8%	Inventec procedure

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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 150 mm/s (1 to 6 inch/s) Maximum depends on printer capabilities
Minimum pitch	0.4 mm for Type 3 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	>12 hours
Abandon time between prints	>4 hours
Steady tackiness	>16 hours

### REFLOW GUIDELINE

Soldering DCB modules requires specific conditions to minimize voids level while achieving consistent BLT. This step usually requires specific thermal profiles with vacuum, adjusted in accordance with the type of ovens, modules and components involved: batch conduction oven with vacuum is the preferred option.

Alternative options are vapor phase oven with vacuum (lower peak temperature and shorter time above liquidus) or convection oven with vacuum.

## 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.
- For an optimal preservation, store cartridges in a vertical position, tip downwards.
- Shelf-life is 12 months for jar packaging & 9 months for cartridges

### AVAILABLE PACKAGING



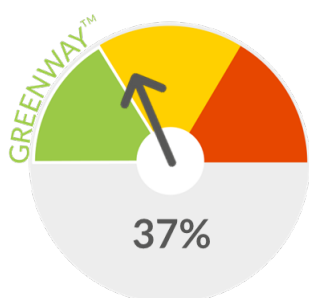
JAR  
500g



CARTRIDGE  
600g

## HEALTH, SAFETY & ENVIRONMENT

ECOREL FREE 305-31A is **NOT** a **GREENWAY** product. Although fully in line with safety & environmental regulations, this product doesn't match our strict criteria to be labelled as a Greenway product. 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.

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 contain quantities above 0.1% of Hg, Pb, 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](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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