



ECOREL™ FREE 0307-VM

SAC0307 LEAD FREE SOLDER PASTE
NO CLEAN SMT PRINTING PROCESS
HIGH VOLUME PRODUCTION & ROBUST ASSEMBLY

BENEFITS

ECOREL FREE 0307-VM is especially designed to cater high volume electronics with an overall balanced solder paste performance to guarantee a stable assembly process. It's a No Clean solder paste combining the metallurgical properties of a low silver alloy with the high performance chemistry of the ECOREL™ range. Besides cost benefits, a low silver alloy provides also a better drop-shock resistance.

This solder paste has excellent visual solder joint cosmetics with transparent residues, even after multiple reflow cycles. It has a high first pass yield testability in ICT and very good wetting on different board finishes, including OSP.

ECOREL FREE 0307-VM is the ideal paste in terms of cost/performance ratio for consumer, brown & white goods electronics manufacturing. The chemistry of 0307-VM is also available in other alloys.

PERFORMANCE	<ul style="list-style-type: none"> Robust assembly for a stable process Very good wetting on all surface finishes, including OSP Transparent colorless residue, even after multiple reflow cycles
COST	<ul style="list-style-type: none"> Good first pass yield testability in ICT
HSE	<ul style="list-style-type: none"> No CMR containing substances Lead Free & No Halogen

FEATURES

STANDARD OPTIONS

SPECIFICATIONS	ECOREL FREE 0307-VM	ECOREL FREE 0307-VM T4
Alloy	Sn99Ag0.3Cu0.7	Sn99Ag0.3Cu0.7
Melting point (°C/°F)	217 / 422	217 / 422
Metal content (%)	88 +/-0,5	88 +/-0,5
Post reflow residues	Approximately 5% by w/w	Approximately 5% by w/w
Halogen content	No Halogen	No Halogen
Powder size	25-45 microns / Type 3	20 - 38 microns / Type 4
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.

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.

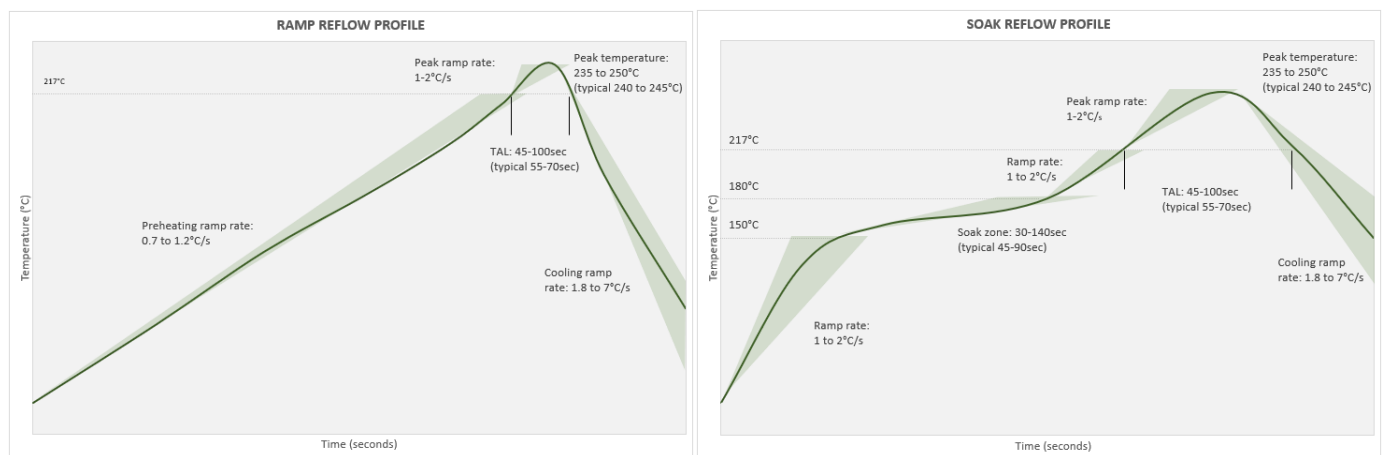
PARAMETER	REMARK														
Printing speed	Minimum 20 to maximum 150 mm/s (1 to 6 inch/s) Maximum depends on printer capabilities														
Minimum pitch	0.4 mm for Type 3 powder														
Pressure	Guideline value for a 250 mm squeegee is 5 Kg for T3 and 6kg for T4 at 100 mm/s Actual value depends on equipment, printing speed and squeegee length <table border="1"> <thead> <tr> <th>Squeegee length</th> <th>Printing Speed</th> <th>PressureT3</th> <th>Pressure T4</th> </tr> </thead> <tbody> <tr> <td rowspan="3">250mm</td> <td>50 mm/s</td> <td>3 kg</td> <td>4 kg</td> </tr> <tr> <td>100 mm/s</td> <td>5 kg</td> <td>6 kg</td> </tr> <tr> <td>150 mm/s</td> <td>7 kg</td> <td>8 kg</td> </tr> </tbody> </table>	Squeegee length	Printing Speed	PressureT3	Pressure T4	250mm	50 mm/s	3 kg	4 kg	100 mm/s	5 kg	6 kg	150 mm/s	7 kg	8 kg
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250mm	50 mm/s	3 kg	4 kg												
	100 mm/s	5 kg	6 kg												
	150 mm/s	7 kg	8 kg												
Stencil life in continuous printing process	>12 hours														
Abandon time between prints	>4 hours														
Steady tackiness	>16 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.

Although low silver alloys usually show a quite similar reflow graph like SAC305, it is recommended to choose a slightly higher peak temperature between 240 °C to 255°C (464°F to 491°F).



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"> From 20 to 150°C ramp rate 1 to 2°C/s Soak zone between 150 to 180°C (302 to 356°F): 60-140s reflow (typical soak 45-90s) From 170°C (380°F) to liquidus 1 to 2°C/s
Peak ramp rate	1 to 2 °C/s
Peak temperature	235 to 250°C (455 to 582°F) / 240 to 245°C (464 to 473°F) is optimum The paste can withstand a temperature higher than 250°C (482°F), but it is not recommended to preserve component integrity.
Time above liquidus	45 to 100s - 55 to 70s typical
Cooling ramp rate	1.8 to 7°C/s Studies has demonstrated 1.8 to 2.2 °C/s allows a more homogeneous joint structure and reduced surface crack formation.

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 with our materials.

PROCESS TYPE	PCBA DEFLUXING SOLUTIONS
Manual	Quicksolv™ DEF90, Quicksolv™ DEF70
Aqueous (Immersion or spray)	Promoclean™ DISPER 607, Promoclean™ DISPER 707, Promoclean™ DISPER 800
Co-solvent	Topklean™ EL 20P or EL 20A + Promosolv™ rinsing solvents
Mono-solvent (vapor phase)	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.
- 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



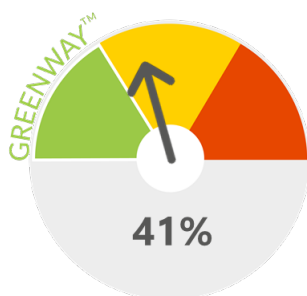
JAR
500g



CARTRIDGE
600g

HEALTH, SAFETY & ENVIRONMENT

ECOREL FREE 0307-VM 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. 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, 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



SOLDERING
CLEANING
COATING
COOLING

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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