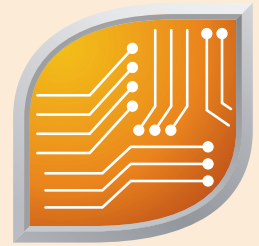


HIGH RELIABILITY ASSEMBLY MATERIALS



Standards:
IPC J-STD-004B ✓
Bellcore ✓
JIS Z 3197 ✓
Plus BONO test

Solder Pastes

INVENTEC offers a broad range of assembly materials especially formulated to enhance reliability of electronics exposed to harsh environments. Electronics found in Aeronautics, Military, Automotive, Rail and Power Electronics require long term reliability. These materials must meet an increasing number of challenges due to both the evolution of the technology itself, and to legislative changes.

MINIATURIZATION is a common trend, boards have higher densities and narrower spacings between tracks and pads. Thus, dendritic growth by electrochemical migration can become a big issue. The purpose of the **Bono test** is to assess the corrosive nature of solder pastes and to quantify it by a corrosion factor [1].

The continuous teamwork of INVENTEC R&D and Application teams over the past 10 years has resulted in a series of high reliability **ECOREL™** solder pastes and **ECOFREC™** soldering fluxes. The improvement to control the risk of electrochemical corrosion has been achieved using the **Bono test** as key technique to probe **CHEMICAL RESIDUE IS INERT** after soldering

To protect the PCB from environmental conditions (temperature, moisture, dirt, etc) use of conformal coating more and more required. The **Bono test** better differentiates the nature of solder paste residues and is a very good parameter for assessing **the compatibility between the solder paste and the conformal coating**. The same method can also be performed for liquid and tacky fluxes.

ECOREL™ No-Clean solder paste range is **compatible with a large range of conformal coatings** available in the market

[1] Technical paper
"Solder Paste Residue Corrosivity Assessment: Bono Test"
available at www.inventec.dehon.com

Lead Free No-Clean solder paste **ECOREL™ Free**

Ecodel™ Free 305-21

- Residues are chemically inert reducing the risk of Electrochemical migration
- Passes Bono Test
- Anti-graping
- Multiple reflow cycles
- No halide, no Halogen

Ecodel™ Free 305-6D 33

- Compatible with a large range of Conformal Coatings
- Very Low Ionic Contamination
- No halide, No halogen

Ecodel™ Free 405Y-21

- High reliability in high operating temperatures
- Thermal cycling resistance
- Passes Bono Test
- Multiple reflow cycles
- No halide, No halogen

Alloys available:

SnAg4.0Cu0.5, SnAg1Cu0.5Ni,
SnCu0.7 with dopants





Solder Flux

No-Clean, VOC-Free flux:

ECOFREC™ 303

- Real VOC-Free flux
- Non-flammable
- Excellent soldering performance on any PCB finish
- High SIR values
- Complies with the Bono test
- Lower cost per PCB compared to alcohol based fluxes

No-Clean, alcohol based flux:

ECOFREC™ 200

- Reduced solder balling
- No false breakdown
- Complies with the Bono test

ECOFREC™ 202

- Complies with the Bono test
- Good cosmetic aspect residue
- High ICT and FP first pass yield

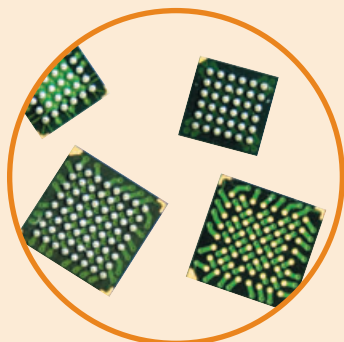
Tacky Flux

Tacky flux paste recommended for rework and soldering

- Ball attach & BGA repair
- No Halide, No Halogen
- High S.I.R. values
- Pass Bono corrosion test

ECOFREC™ TF 48: excellent printing performance

ECOFREC™ TF 49: colorless residue



Defluxing

Defluxing of solder paste or flux residues after die attach, flip chip or SMT reflow process to improve performance of wire bonding, underfill and conformal coating.

MINIATURIZATION means reduction of solder pads, smaller components with lower stand off and also amount of flux residues accumulated in tight, difficult access areas. In addition, new components are included with higher capacities and functions: capacitors, diodes, quartz, MEMS, microBGAs, LEDs and others. Miniaturization and advanced packaging should not become a challenge for reliability. The cleanliness should be performed and pass the norms

INVENTEC provides a range of water and solvent based cleaning chemistries to achieve best defluxing results.

Water based solution: PROMOCLEAN™ Disper 607

- High wetting performance permits efficient removal of lead free soldering pastes and fluxes
- High rinsing capacity to reduce cycle times
- Environmental friendly, formulation based on natural resources.
- For automated process using spray-in-air or by dipping, with ultrasonics or jetting systems



Solvent based solution:

TOPKLEAN™ EL 20A or EL 20R + NOVEC™ 71 IPA

- Cleaned, rinsed and dried PCBAs under 15 min cycle time
- Dielectric chemistry can safely clean pre-charged parts (i.e. complex systems, power modules, batteries, etc)
- High defluxing power removes a large range of No Clean lead free fluxes
- No white residues
- Great materials compatibility
- Efficient cleaning in low stand off components, tight areas and miniaturization thanks to high wetting index and high solvency power [KB index]