



NEW

Ecorel™ Oxal AG

SILVER OXALATE SINTERING PASTE FOR HIGH THERMAL CONDUCTIVITY

- ✓ VOID FREE PROCESS
- ✓ ROHS & REACH COMPLIANT (LEAD & NANO FREE)
- ✓ LOW TO ZERO SINTERING PRESSURE NEEDED
- ✓ LOW SINTERING TEMPERATURE
- ✓ INCREASED LONG TERM RELIABILITY
- ✓ EXCELLENT THERMAL AND ELECTRICAL PROPERTIES
- ✓ NO ORGANIC RESIDUE AFTER SINTERING
- ✓ NO NEED OF STORAGE BELOW FREEZING POINT
- ✓ COST EFFICIENT SOLUTION
- ✓ FOR LASER AS WELL AS CONVENTIONAL SINTERING

**INVENTEC**
PERFORMANCE CHEMICALS

INSPIRING INNOVATION



SPECIFIC
PROCESS



EXCELLENT
COMPATIBILITY



OPTIMIZED
PROCESS

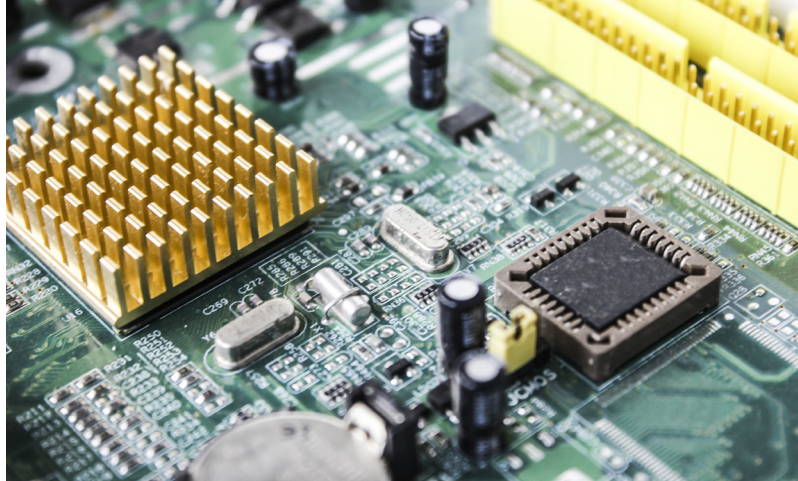


ENVIRONMENTAL
FRIENDLY

www.inventec.dehon.com

Ecorel™ Oxal AG

An innovative Power Packaging solution for high thermal conductivity, allowing high operating temperatures and higher density design.



There is an increasing need for electronic circuits and components to withstand 300° C or more. This is especially true for Power Electronics or electronic devices used in high temperature environments. Add on the wish for higher density packagings and conventional ways of bonding are reaching their technological limits. Alternative solutions (gold solders, SLID, Epoxy, brazing, Au-Sn preforms, nano silver sintering) have been introduced in the market but all with their own drawbacks. With the development of Ecorel Oxal AG we believe to present a valuable & cost efficient solution for the future. In addition, recent RoHS directives foresee a ban of lead in high temperature solder solutions by 2021. One more reason to look into alternatives now.

FEATURES	VALUE	ADVANTAGE
Paste Composition	organo-metalic compound	no hazard as Nano particles are created during sintering*
Joint Composition	pure silver	no organic residues
Particle size	micro-metric	no hazard as Nano particles are created during sintering*
Storage conditions / shelf-life	between 0-10° C / 6 months in syringes	no need for freezer storage and transport
Sintering pressure	0.2 to 0.3 Mpa 0 Pa if no high performance is required	ideal for pressure sensitive components
Oven requirements	sintering oven or laser sintering	no need for special equipment works well with laser sintering
Operating temperature	melting point Silver = 961° C	high operating temperature without any remelting risk
Electric conductivity (S/cm)	6.10 ⁴	excellent electric conductivity
Thermal conductivity (W/K/m)	twice higher than Au-Sn	excellent thermal conductivity
Shear strength	3 - 5 KG if no sintering pressure 25 KG with sintering pressure	Excellent bonding, especially when sintering pressure is applied
Young modulus	< 50 Mpa	reducing thermo-mechanical constraints (CTE)
Joint aspect	No voids / 30 micro-porous layer	optimal heat transfer and avoid joint cracking
RGA (residual gas analysis)	No gas	increased reliability

**The micro-particles paste $Ag_2C_2O_4$ is during decomposition transformed into $2Ag + 2CO_2$. Where 2 Ag represents the nano-particles and the 2 CO_2 is drawn and collected outside the equipment.*

- Silver Oxalate based process was patented in 2011 by Thales and CNRS. Inventec acquired a patent license and participated to R&T program «BRAVOH», supported by DGA, Direction Générale de l'Armement of France.

- Ecorel Oxal AG has been developed in partnership with ISP Systems, a key player in the field of precision engineering, mechatronics and robotics and related to this development, specialized in Die Attach systems. (www.isp-system.fr)