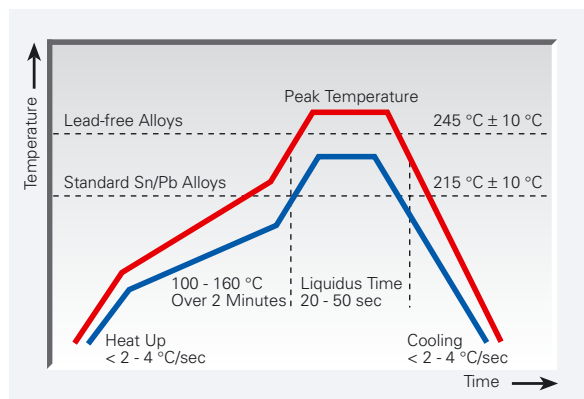


Base material for lead-free soldering

Pb The EU directive 2002/95/EWG (RoHS) restricts the use of lead in new electrical and electronic equipment put on the market after June 2006. The directive has a major influence on soldering technologies and consequently brings new requirements for PCB base materials.

In the meantime tested lead-free solders are available for PCB manufacturer and assembler. The operation temperature, however, will be up to 40 °C higher compared to common techniques. The thermal treatment of substrates and components will become significantly higher.

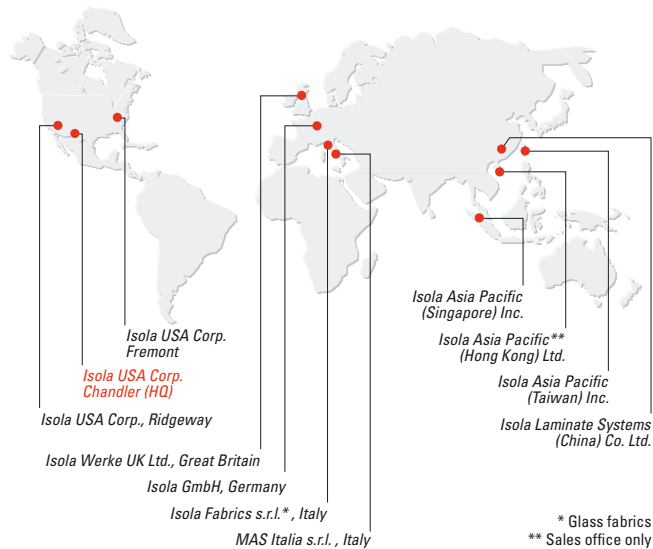


Critical constructions, as for example thin printed circuits boards with a high rate of copper, can result in undesirable affects, such as:

- Deformation by softening
- Pad lifting
- Barrel cracks
- Delamination at critical interfaces

Isola has already adapted its product offerings to comply with the new requirements and is positioned to support your implementation of lead free soldering with a wide range of base materials. The inside mentioned table shows a good overview of the available qualities. Please use our know-how for your individual solution!

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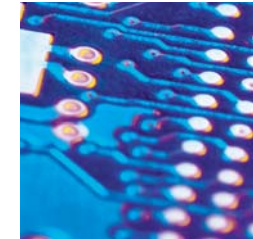
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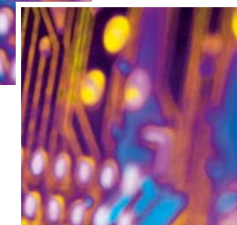
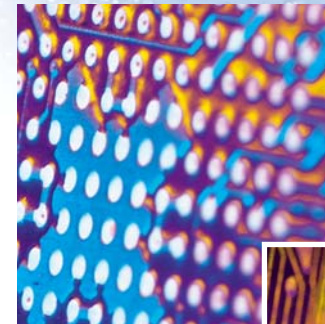
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BASE MATERIAL
Pb FOR LEAD-FREE
 SOLDERING



Pb	DE104	IS400	IS410	IS415	IS420	DE156	IS500	FR408	IS620	IS640
T _g (DSC) [°C]	135	150	180	190	170	150	170	180	215	225
T ₂₆₀ [min]	> 60	> 60	> 60	> 60	> 60	> 60	> 60	> 60	> 60	> 60
T ₂₈₈ [min]	> 10	> 15	> 15	> 20	> 15	> 15	> 15	> 15	> 15	> 10
CTE "z" (RT – T _g) [ppm/K]	45	40	55	55	40	40	40	65	40	n.a.
D _k (2 GHz)	4.20	4.20	4.00	3.90	4.00	4.00	3.90	3.60	3.60	3.0 – 3.6
D _f (2 GHz)	0.0200	0.0200	0.0210	0.0160	0.0200	0.0200	0.0160	0.0110	0.0080	< 0.0045
CAF resistant	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RoHS conform	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Remark	Cycle resistant	Cycle resistant			Cycle resistant	Halogen free	Halogen free	Low D _k Low D _f	Low D _k Very low D _f	Very low D _k Very low D _f

■ Thermal Resistant
 ■ Halogen free
 ■ High frequency application