



# Lead Free Applications Lab

## Metcal Lead-Free Product Compliance

The Metcal soldering products have long been the established irons for high performance soldering applications and rework. The 2006 Lead-Free soldering standard has lead many customers to re-evaluate their hand soldering and rework products.

The current installed base of Metcal products are more than capable for lead-free use. In fact the SmartHeat® technology employed by the Metcal products has a number of key benefits when working with lead-free soldering alloys:

- Fixed temperature variable power means that the soldering tip directly responds to the thermal demand of the joint thus reducing the chance of board damage even with the higher melting points of lead-free alloys.
- Metcal tips and cartridges can be supplied in various ranges designed to work for different thermal loads.
- All Metcal soldering tips and cartridges are shipped lead-free compliant.



The best practice when evaluating lead-free hand soldering connections is to optimize the energy transfer to the joint before raising soldering temperatures. Select the correct geometry for the connection before moving to a higher temperature range tip series. This will provide the longest tip life and the reduce the chance of board damage.

### Best Practices For Lead-Free Soldering

- Understand the thermal requirements of the joint.
- Select the correct tip geometry:
  - Use the largest contact area to pad.
  - Use the largest tip body to maximize energy transfer.
  - Use the shortest tip length to maximize energy transfer.
- Understand the board coatings and their wettability.
- Understand the flux and solder combinations.
- Keep iron tips tinned to prevent oxidation.
- Use preheat for rework where required.

**Soldering at the lowest temperatures with good thermal transfer will provide the best results and safest process.**

Contact your local representative for further support.

### Soldering Products Suitable for Lead-free:

- MX-500 (whole range).
- SP-200.
- PS-800.
- SP-440.
- All Tip Ranges (be sure you specify the latest lead-free versions).

### Tip Life Tips

- Re-tin tips regularly.
- Select the right geometry for the application.
- Solder at the lowest temperature range possible to reduce tip oxidation problems.
- Turn power supply off when not in use.
- Use low activity flux.
- Keep tin and sponge clean.