Lead-Free Solder vs Leaded Solder

This chart compares the key differences between modern lead-free solder and traditional leaded (tin/lead) solder used in electronics assembly, repair, and manufacturing.

Feature	Lead-Free Solder	Leaded Solder
Typical Composition	Tin / Silver / Copper (SAC)	Tin / Lead (Sn/Pb)
Lead Content	None	Contains Lead
RoHS Compliant	Yes	No
Melting Point	217–227 °C	183 °C
Ease of Use	Slightly harder to solder	Very easy to solder
Solder Flow	Good	Excellent
Joint Appearance	Dull / matte finish	Shiny finish
Mechanical Strength	High strength	Softer joint
Health Safety	Safer	Toxic with long exposure
Environmental Impact	Eco-friendly	Polluting
Smoke & Fumes	Lower toxicity	Higher toxicity
Typical Use	Modern electronics, schools, industry	Old electronics, hobby repair

Usage Recommendation Lead-free solder is recommended for all modern electronics production, educational use, and RoHS-compliant applications. Leaded solder is mainly used for repairing older equipment or where regulations still allow its use.