FCT Assembly
LEADERS IN TECHNOLOGY

Process Bulletin

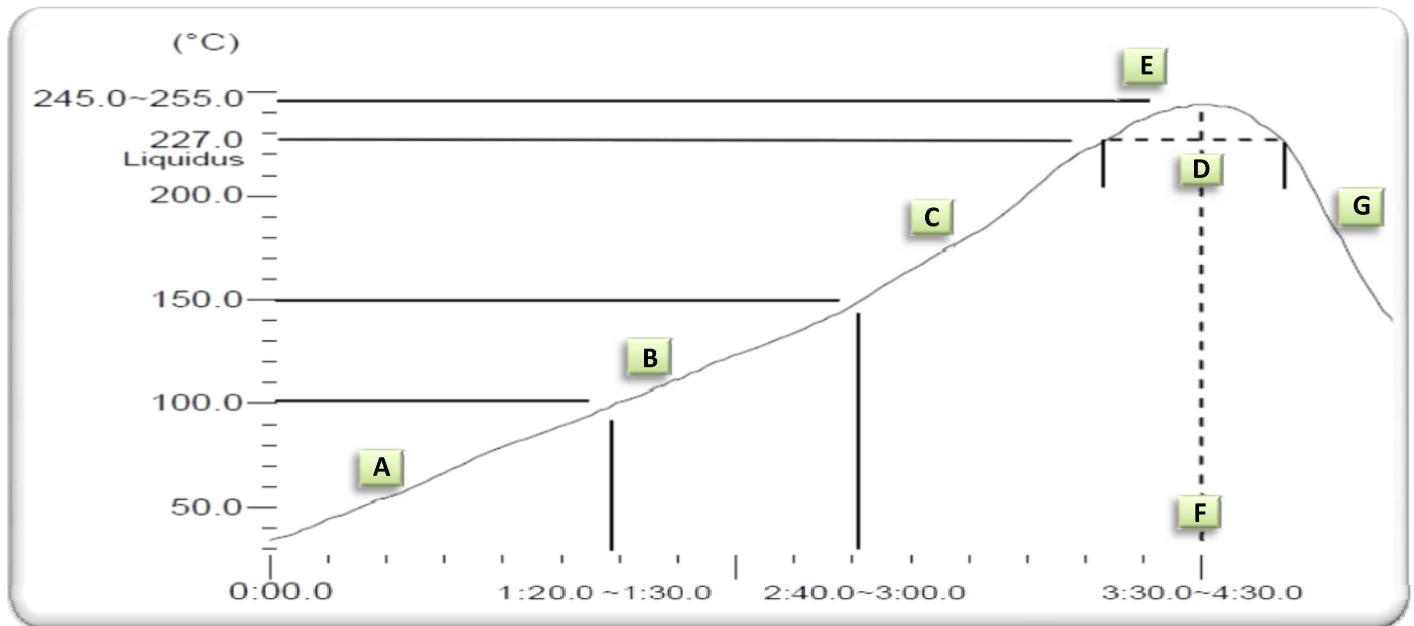
Linear Profile Process Guidelines

Sn100C Linear Profile Guide

Sn100C Solder Pastes

APPLICATION

Solder Paste	Board Surface Finish	Component Plating
No-Clean and Water Soluble Chemistries Sn100C Solder Pastes	Au, Sn, Ag, SN100C HASL and similar OSP Organic Surface Preservative	Standard plating, Au, Pt, Pd, Pd/Ag, Ag, Alloy 42



A	PREHEAT RATE of RISE	• Ramp from 45˚C to 100˚C in 80 ~ 90 seconds. • Maintain a straight-line ramp for the first 90~120 seconds of this profile, triggered from 45˚C. Note: Linear profile ramp rates are naturally lower than those in a Ramp-Soak style profile. Linear preheat ramp rates should be maintained between 0.7°C ~ 2.0°C/second MAX. Too low of a ramp rate will promote hot slump, solder balls and solder beading.
B	SOAK	• Low, gradual ramp rates inherent to linear profiles provide virtual equilibrium throughout the reflow process, resulting in the near elimination of the typical soak zone. Maintain a linear thermal transition through this area.
C	TRANSITION TO REFLOW	• While a linear profile does not typically produce tombstoning, transition times and temperatures should always be monitored to ensure a robust process. • Keeping ramp-rates and the ΔT between soak and liquidus temperatures to a minimum will help eliminate tombstoning if experienced.
D	TIME AT LIQUIDUS Sn100C MP=227˚C Sn/Cu.07/Ni.05	• Target a time above 227˚C of 50 ~ 55 seconds, with a window of 45 ~ 75 seconds.
E	PEAK TEMPERATURE	• Target peak temperature should be 245˚C • The recommended peak temperature range for Sn100C is 240°C~255°C
F	OVERALL PROFILE LENGTH	• Total Profile Length from 45°C to PEAK should be 3 ½ ~ 4 ½ Minutes nominal.
G	COOLING	Cool down is a critical part of the reflow process for lead-free solders, and should be monitored closely. Too low (or slow), of a cool-down rate can allow or promote micro-cracking of the solder joints, an inherent problem to some lead-free alloys. It also permits the formation of larger grain structures, promoting a dull / grainy appearance. (Not necessarily a defect) • Cool-down for lead-free alloys should typically be controlled between 3° ~ 4°C/second. • Target 4°C to start to insure a fine grain solder structure and minimal IMC layer