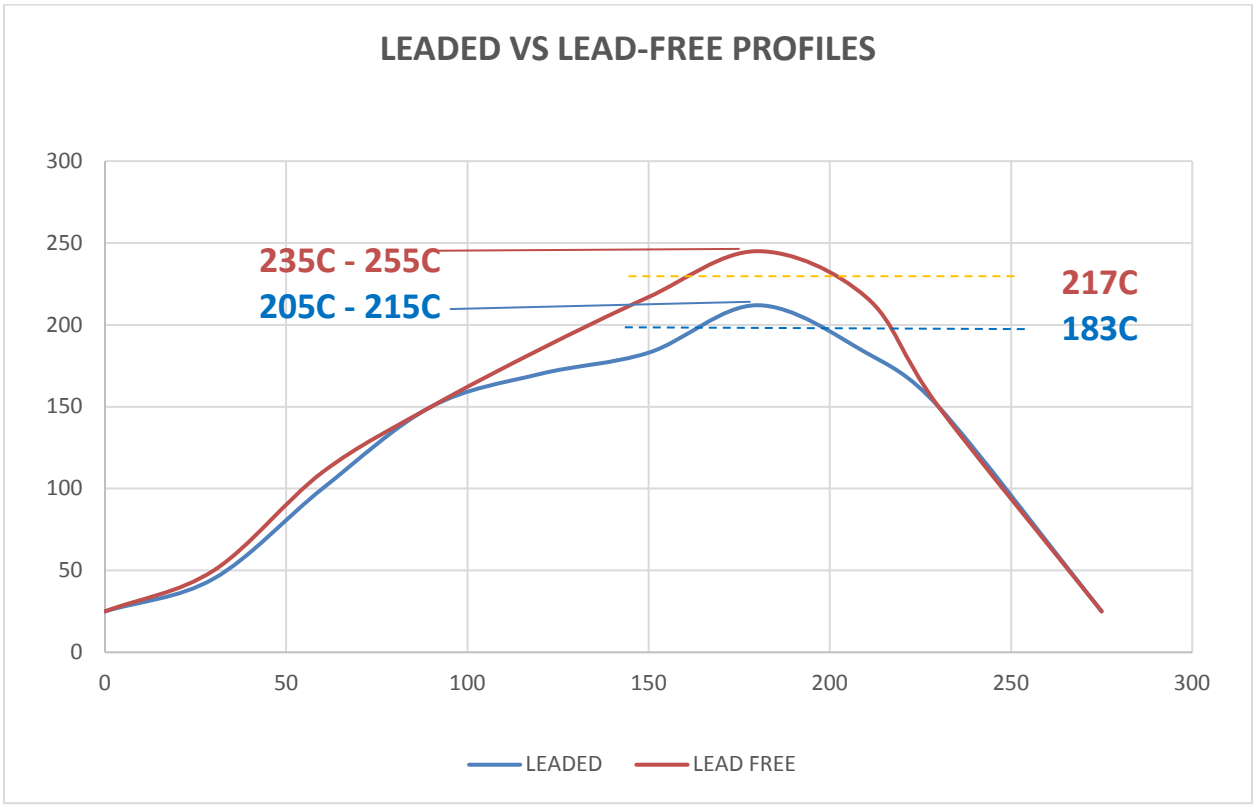

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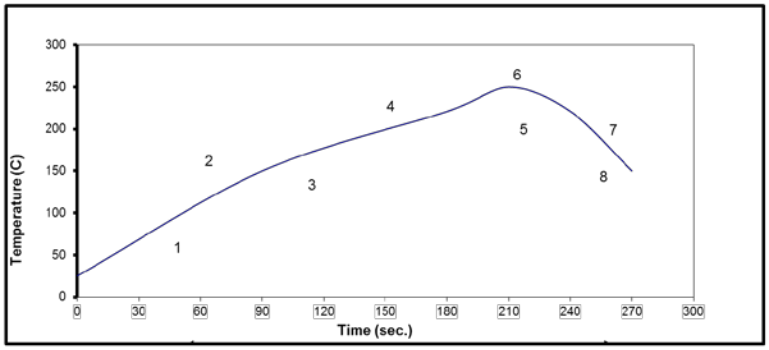
Potential reasons for defects:
In some cases, if the profile goes too far in the direction of the number you may have the following conditions. Always verify your profile. If you have any questions, please call the Kester Technical Support.

1. Insufficient Temperature to Evaporate Solvent
2. Component Shock and Solder Splatter
3. Insufficient Flux Activation
4. Excessive Flux Activity and Oxidation, Hot Slump
5. Trapping of Solvent and Flux, Void Formation, Poor wetting
6. Component and/or Board Damage, Intermetallic formation
7. Duller Solder Joints
8. Thermal Shock to Components



Tools needed to setup a solder paste reflow profile:

- Calibrated profiler with at least four thermal couple ports and thermal couple wires
- Populated circuit board that represents the one going to be soldered
- A print or description of the proper profile for the solder paste being used. The Technical Data sheet will have a reflow diagram of the proper profile defining times and temperatures that will provide the best results. This will be the starting point for your profile adjustments might be required based on results.
- The length of the heated tunnel. This is typically found within the oven description from the equipment manufacture or you can open the top of the oven and measure from the beginning of the first heat zone to the end of the last one.

Attach the thermal couple wires to the circuit board.[1]

When attaching thermal couple wires:

1. Ensure the ball is in contact to the surface of the solder joint.
2. Arrange them across the board so the leading and trailing edges and largest and smallest mass areas of the board are going to be thermally measured.

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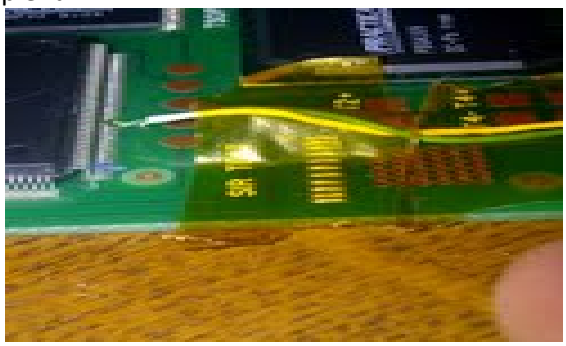
[1] This is a picture of the thermal couple wire end touching the point we wish to measure. I would "hood" the area above the end of the TC wire with a piece of tape to prevent "noise" when the board passes directly under a hole in the hot air plenum.



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3. Set the sample time to 1 second.
4. If your results match the oven settings, then the TC wire is not in contact with the board.
5. Attachment to the board can be done with component adhesive, Kapton tape or high temp solder, if the board is not HASL.

Determining the proper speed for the conveyor:

1. Measure the heated tunnel and divide your results by 3.5. Then divide the length by 4.
2. The results will be the speed range you can use so your profile ends at the last zone between 3.5-4 minutes. This will allow you to use the complete oven regardless of how many zones you have.

Temperature Settings:

- The number of heat zones and settings will vary from machine to machine. Run a profile with the current temperature settings then determine what changes need to be made to the heat zones keeping the speed constant.
- If your profiler has a predict function in the software, use it to predetermine your settings.
- The results you are trying to achieve is what you find in the solder paste Technical Data sheet. You should have the same temperature across the board at the time you cross the liquids point.
- Assess your results. Then use the predict function to make any required changes. When setting up the software in the profile you must make sure the zone start and finish must match the resulting first profile to get a good prediction. If changes are needed run the profiler through the oven again to verify your changes.

For any questions, please contact:

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