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Reflow Oven Process Control Standard

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Reflow Oven Process Control Standard

Developed by the Reflow Oven Process Subcommittee (5-45) of IPC

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Users of this publication are encouraged to participate in the development of future revisions.

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Table of Contents

1 SCOPE 1
1.1 Purpose 1
1.2 Measurement Units 1
1.3 Definition of Requirements 1
1.4 Process Control Requirements 1
1.5 Order of Precedence 1
1.5.1 Conflict 1
1.5.2 Clause References 1
1.6 Terms and Definitions 2
1.6.1 Oven Profile 2
1.6.2 Profiling System 2
1.6.3 Ramp 2
1.6.4 Recipe 2
1.6.5 Reflow Oven 2
1.6.6 Thermocouple 2
1.6.7 User 2
1.6.8 Verification Test Vehicle 2

2 APPLICABLE DOCUMENTS 3
2.1 IPC 3
2.2 ASTM 3
2.3 JEDEC 3

3 OVEN CHARACTERIZATION AND CONTROL 3
3.1 Oven Calibration 3
3.2 Oven Repeatability Recipe 3

4 THERMOCOUPLES 3
4.1 ‘‘K’’-Type Thermocouple 3
4.2 Additional Recommendation 4
4.2.1 Long Wires 4
4.2.2 Stress Relief 4
4.3 Recognizing Potential Issues 4
4.3.1 Variations in Attachments 4
4.3.2 Twisted Wires 4
4.3.3 Spikes in Temperature Data 4
4.3.4 Excessively High or Low Temperature 4
4.3.5 Transport Errors 4

5 VERIFICATION TEST VEHICLE DESIGN 4
5.1 Test Vehicle Materials 5
5.2 Thermocouples 5
5.2.1 Bolt-on Thermocouples 5
5.2.2 Eyelet Thermocouples 5
5.2.3 Epoxy Bond 5

6 PROFILING EQUIPMENT REQUIREMENTS 5
6.1 Types of Profiling Equipment 5
6.1.1 Built-In Profilers 5
6.1.2 Remote Profilers 6
6.2 Minimum Data Acquisition 6
6.3 Measurement Accuracy 6

7 VERIFICATION PROFILING REQUIREMENTS 7
7.1 Verification Frequency 7
7.2 Verification Profiling Data Requirements 7
7.3 Oven Profile Repeatability Measurements/Limits 7
7.4 Profile Specification Process 7

Figures

Figure 1-1 Typical Graph Representation of an Oven Profile 2
Figure 3-1 Example of an Oven Repeatability Recipe . . . 3
Figure 4-1 Stress Relief on Test Vehicle 4
Figure 4-2 Spikes in Temperature Data 4
Figure 5-1 Bolt-on Thermocouple Method 5
Figure 5-2 Bolt on Eyelet Thermocouple Attachment Method 5
Figure 5-3 Epoxy Attachment 5
Figure 6-1 Built-in Thermocouple Attachment Sites on a Reflow Oven 6
Figure 6-2 Remote Traveling Profiling System 6
Figure 7-1 Measurement Points for an Eight-Zone Oven for One Thermocouple 7

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Reflow Oven Process Control Standard

1 SCOPE

This standard provides requirements for process control of conveyorized solder reflow ovens. It includes a methodology for performing temperature measurements over time to establish a baseline profile, and then provides requirements to verify repeatability through periodic verification of the oven profile.

This standard is not intended for the assembly product profile/recipe. For detailed information on development or verification of a product profile/recipe, see IPC-7530.

This standard does not address vapor phase processes. Batch ovens offer lower throughput and are also not covered in this standard.

1.1 Purpose This standard provides baseline performance, periodic verification and performance repeatability requirements for reflow oven equipment.

1.2 Measurement Units This standard uses International System of Units (SI) units [Imperial English equivalent units are in brackets for convenience]. The SI units used in this standard are Celsius (°C) [°F] for temperature and temperature tolerances.

1.3 Definition of Requirements The words **shall** or **shall not** are used in the text of this document wherever there is a requirement for materials, preparation, process control or acceptance.

The word "should" reflects recommendations and is used to reflect general industry practices and procedures for guidance only.

Line drawings and illustrations are depicted herein to assist in the interpretation of the written requirements of this Standard. The text takes precedence over the figures.

1.4 Process Control Requirements The primary goal of process control is to continually reduce variation in the processes, products, or services to provide products or processes meeting or exceeding User requirements. Process control tools such as IPC-9191, JESD557 or other User-approved system may be used as guidelines for implementing process control.

Users **shall** develop and implement a documented process control system for reflow soldering.

The documented process control system **shall** define process control and corrective action limits.

This may or may not be a statistical process control system. The use of "statistical process control" (SPC) should be based on factors such as design stability, lot size, production quantities, and the needs of the User.

Process control methodologies **shall** be used in the planning, implementation and evaluation of the reflow soldering processes. The philosophy, implementation strategies, tools and techniques may be applied in different sequences depending on the specific company, operation, or variable under consideration to relate process control and capability to end product requirements.

When a decision or requirement is to use a documented process control system for reflow soldering, failure to implement process corrective action and/or the use of continually ineffective corrective actions **shall** be grounds for disapproval of the reflow soldering process and associated documentation.

1.5 Order of Precedence The contract **shall** take precedence over this Standard, referenced standards and drawings.

In the event of conflict, the following order of precedence applies:

1) Procurement as agreed and documented between customer and User.

2) Master drawing reflecting the customer's detailed requirements.

3) When invoked by the customer or per contractual agreement, this standard.

When documents other than this standard are cited, the order of precedence should be defined in the procurement documents.

1.5.1 Conflict In the event of conflict between the requirements of this standard and the applicable drawing(s) and documentation, the applicable customer-approved drawing(s) and documentation govern.

Some examples of documentation include the contract, purchase order, technical data package, engineering specification or performance specification. In the event of a conflict between the text of this standard and the applicable documents cited herein, the text of this standard takes precedence. In the event of conflict between the requirements of this standard and drawing(s) and documentation that has not been customer approved, this standard governs.

1.5.2 Clause References When a clause in this document is referenced, its subordinate clauses apply, unless the requirement references specific subordinate clauses.