IPC-7527

Requirements for Solder Paste Printing

Developed by the Solder Paste Printing Task Group Nordic (5-21JND) of the Component Mounting Subcommittee (5-21) of the Assembly and Joining Committee (5-20) of IPC

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

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Requirements for Solder Paste Printing

1 GENERAL

1.1 Scope This standard is a collection of visual quality acceptability criteria for solder paste printing.

1.2 Purpose The purpose of this guideline document is to support the user in the visual evaluation of the solder paste printing process, which makes subsequent process optimizing possible.

The purpose of this guideline is not to inspect and evaluate the quality of the solder paste. For information on the evaluation of solder paste, see J-STD-005, *Requirements for Soldering Pastes* and IPC-HDBK-005.

The purpose is not to define requirements to stencil design. For information on stencil design, see IPC-7525, *Stencil Design Guideline.*

Appendix A provides different error types and suggested solutions are listed. The guideline is intended to help/ improve the optimizing process for paste printing.

In the case of a discrepancy, the description or written criteria always takes precedence over the illustrations.

1.3 Background Standards such as J-STD-001 and IPC-A-610 provide tools that help to promote quality within the electronics industry. However, the standards do not include requirements of visual appearance of the paste deposit. The industry has, for some time, expressed a wish for a standard to support the users in the solder paste printing process. IPC-7527 will help improve the quality in this very sensitive process.

1.4 Terms and Definitions Other than those terms listed below, the definitions of terms used in this standard are in accordance with IPC-T-50. Terms quoted from IPC-T-50 are marked with *.

1.4.1 Classification

CLASS 1 General Electronic Products
Includes products suitable for applications where the major requirement is function of the completed assembly.

CLASS 2 Dedicated Service Electronic Products
Includes products where continued performance and extended life is required, and for which uninterrupted service is desired, but not critical. Typically the end-use environment would not cause failures.

CLASS 3 High Performance Electronic Products
Includes products where continued high performance or performance-on-demand is critical, equipment downtime cannot be tolerated, or the end-use environment may be uncommonly harsh.

Target Condition A condition that is close to perfect/ preferred, however, it is a desirable condition and not always achievable and may not be necessary to ensure reliability of the assembly in its service environment.

Acceptable Condition Indicates a condition that, while not necessarily perfect, will maintain the integrity and reliability of the assembly in its service environment.

Defect Condition A condition that may be insufficient to ensure the form, fit, or function of the assembly in its end use environment. Defect conditions **shall** be dispositioned by the manufacturer based on design, service, and customer requirements. Disposition may be to rework, repair, scrap, or use as is. Repair or use as is may require customer concurrence.

A defect for Class 1 automatically implies a defect for Class 2 and 3. A defect for Class 2 implies a defect for Class 3.

1.4.2 Disposition* The determination of how defects should be treated. Dispositions include, but are not limited to, rework, use as is, scrap, or repair.

1.4.3 Slumping Solder paste flows out after it is applied. See more in IPC-HDBK-005.

1.4.4 Combined Conditions There may be situations where a combination of maximum deviations in form, placement, coverage, and height can result in lack of soldering or wrong amount of solder paste. The manufacturer is responsible for identification of such conditions.

1.4.5 Designed Volume The designed volume is equal to the area of the stencil aperture times the stencil thickness (volume = length x width x height). Volume is not a visually inspectable condition.

1.5 Specialized Designs This standard, as an industry consensus document, cannot address all of the possible components and product design combinations. Where uncommon or specialized technologies are used, it may be necessary to develop unique acceptance criteria. However, where similar characteristics exist, this document may provide guidance for product acceptance criteria. Often, unique definition is necessary to consider the specialized characteristics while considering product performance criteria. The development should include customer involvement or consent. For Class 3, the criteria **shall** include agreed definition of product acceptance.