Requirements for Soldered Electrical and Electronic Assemblies

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

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If a conflict occurs between the English and translated versions of this document, the English version will take precedence.
# Table of Contents

## 1.0 GENERAL
- 1.1 Scope .......................................................... 1
- 1.2 Purpose .......................................................... 1
- 1.3 Classification .................................................. 1
- 1.4 Measurement Units and Applications ................. 1
- 1.4.1 Verification of Dimensions .............................. 2
- 1.5 Definition of Requirements ............................... 2
- 1.5.1 Hardware Defects and Process Indicators .......... 2
- 1.5.2 Material and Process Nonconformance .......... 2
- 1.5.3 Procedures for Specialized Technologies ..... 2
- 1.6 Process Control Requirements .......................... 3
- 1.6.1 Opportunities Determination ......................... 3
- 1.6.2 Statistical Process Control ............................. 3
- 1.7 Order of Precedence ........................................ 4
- 1.7.1 Appendices .................................................. 4
- 1.8 Terms and Definitions ...................................... 4
- 1.8.1 Circumferential Solder Separation (Area Void of Solder) .... 4
- 1.8.2 Diameter ..................................................... 4
- 1.8.3 Disposition .................................................. 4
- 1.8.4 Electrical Clearance ..................................... 4
- 1.8.5 Engineering Documentation .......................... 4
- 1.8.6 FOD (Foreign Object Debris) ......................... 4
- 1.8.7 High Voltage ............................................... 4
- 1.8.8 Manufacturer ............................................... 4
- 1.8.9 Objective Evidence ...................................... 5
- 1.8.10 Process Control ........................................... 5
- 1.8.11 Proficiency ............................................... 5
- 1.8.12 Solder Destination Side ............................... 5
- 1.8.13 Solder Source Side ..................................... 5
- 1.8.14 Solder Void ............................................... 5
- 1.8.15 Supplier ..................................................... 5
- 1.8.16 Tempered Leads ........................................... 5
- 1.8.17 User .......................................................... 5
- 1.8.18 Wire Overlap ............................................. 5
- 1.8.19 Wire Overwrap ........................................... 5
- 1.9 Requirements Flowdown .................................. 6
- 1.10 Personnel Proficiency ..................................... 6
- 1.10.1 X-Ray Specific Personnel Proficiency ............ 6
- 1.11 Acceptance Requirements ............................... 6
- 1.12 Inspection Methodology ................................. 6
- 1.12.1 Process Verification Inspection ...................... 6
- 1.12.2 Visual Inspection ......................................... 6
- 1.13 Facilities ..................................................... 7
- 1.13.1 Environmental Controls ............................... 7
- 1.13.2 Field Assembly Operations ........................ 8
- 1.13.3 Health and Safety ....................................... 8
- 1.14 Electrostatic Discharge (ESD) ......................... 8

## 2.0 APPLICABLE DOCUMENTS
- 2.1 IPC ............................................................. 9
- 2.2 JEDEC .......................................................... 9
- 2.3 Joint Industry Standards .................................. 10
- 2.4 ASTM .......................................................... 10
- 2.5 EOS/ESD Association, Inc. ............................ 10
- 2.6 International Electrotechnical Commission ........ 10
- 2.7 SAE International ........................................... 10
- 2.8 Military Standards .......................................... 10
- 2.9 Aerospace Industries Association / National Aeronautics Standards ........ 10

## 3.0 MATERIALS, COMPONENTS AND EQUIPMENT REQUIREMENTS
- 3.1 Materials ....................................................... 11
- 3.2 Solder ......................................................... 11
- 3.2.1 Solder – Pb-Free ......................................... 11
- 3.2.2 Solder Purity Maintenance ........................... 11
- 3.3 Flux ............................................................ 12
- 3.3.1 Flux Application ......................................... 12
- 3.4 Adhesives ..................................................... 12
- 3.5 Chemical Strippers ........................................ 12
- 3.6 Components ................................................ 13
- 3.6.1 Component and Seal Damage ...................... 13
- 3.6.2 Coating Meniscus ....................................... 13
- 3.7 Tools and Equipment ...................................... 13

## 4.0 GENERAL SOLDERING AND ASSEMBLY REQUIREMENTS
- 4.1 Solderability .................................................. 15
- 4.2 Solderability Maintenance ............................... 15
- 4.3 Removal of Component Surface Finishes ........... 15
- 4.3.1 Gold Removal ........................................... 15
- 4.3.2 Other Metallic Surface Finishes Removal ....... 15
8.3.2 Level 2 – Minor Changes Requiring Objective Evidence .............................. 64
8.4 Foreign Object Debris (FOD) .......................................................... 64
8.5 Visible Residues ........................................................................... 65
8.6 Non-ionic Residues ..................................................................... 65
8.7 Ultrasonic Cleaning Processes ...................................................... 65
8.8 Guidance Documents .................................................................. 65

9.0 PRINTED BOARD REQUIREMENTS ................................................................. 67
9.1 Printed Board Damage .................................................................. 67
9.1.1 Blistering/Delamination .............................................................. 67
9.1.2 Weave Exposure/Cut Fibers ......................................................... 67
9.1.3 Haloing ..................................................................................... 67
9.1.4 Edge Delamination .................................................................. 67
9.1.5 Land/Conductor Separation ....................................................... 67
9.1.6 Land/Conductor Reduction in Size ........................................... 67
9.1.7 Flexible Circuitry Delamination ................................................ 67
9.1.8 Flexible Circuitry Damage .......................................................... 67
9.1.9 Burns ......................................................................................... 67
9.1.10 Non-Soldered Edge Contacts .................................................... 67
9.1.11 Measles .................................................................................... 67
9.1.12 Crazing .................................................................................... 68
9.2 Marking .......................................................................................... 68
9.3 Bow and Twist (Warpage) .............................................................. 68
9.4 Depanelization ............................................................................. 68

10.0 COATING, ENCAPSULATION AND STAKING (ADHESIVE) ....................... 69
10.1 Conformal Coating ...................................................................... 69
10.1.1 Materials .................................................................................. 69
10.1.2 Masking .................................................................................... 69
10.1.3 Application ............................................................................... 69
10.1.4 Thickness ................................................................................ 69
10.1.5 Uniformity ................................................................................ 69
10.1.6 Bubbles and Voids ................................................................. 69
10.1.7 Delamination ........................................................................... 70
10.1.8 Foreign Objects Debris .............................................................. 70
10.1.9 Other Visual Conditions .......................................................... 70
10.1.10 Inspection .............................................................................. 70
10.1.11 Rework or Touchup ................................................................. 70
10.2 Encapsulation ............................................................................. 70
10.2.1 Application ............................................................................... 70
10.2.2 Performance Requirements ...................................................... 70
<table>
<thead>
<tr>
<th>Table 7-20</th>
<th>Dimensional Criteria – Flattened Post Terminations ........................................ 57</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 7-21</td>
<td>Dimensional Criteria – P-Style Terminations ........................................................................ 58</td>
</tr>
<tr>
<td>Table 7-22</td>
<td>Dimensional Criteria – Vertical Cylindrical Cans with Outward L-Shaped Lead Terminations ........ 59</td>
</tr>
<tr>
<td>Table 7-23</td>
<td>Dimensional Criteria – Wrapped Terminals ......................................................................... 61</td>
</tr>
<tr>
<td>Table 7-24</td>
<td>Dimensional Criteria – Flexible and Rigid-Flex Circuitry with Flat Unformed Leads .................. 62</td>
</tr>
<tr>
<td>Table 8-1</td>
<td>Designation of Surfaces to be Cleaned .............................................................................. 63</td>
</tr>
<tr>
<td>Table 8-2</td>
<td>Residue Testing For Process Control .................................................................................. 63</td>
</tr>
<tr>
<td>Table 8-3</td>
<td>Maximum Acceptable Rosin, Note 1 ..................................................................................... 65</td>
</tr>
<tr>
<td>Table 10-1</td>
<td>Coating Thickness .............................................................................................................. 69</td>
</tr>
</tbody>
</table>
Requirements for Soldered Electrical and Electronic Assemblies

1.0 GENERAL

1.1 Scope  This standard describes materials, methods and acceptance criteria for producing soldered electrical and electronic assemblies. The intent of this document is to rely on process control methodology to ensure consistent quality levels during the manufacture of products. It is not the intent of this standard to exclude any procedure, such as for component placement or for applying flux and solder used to make the electrical connection.

The soldering operations, equipment, and conditions described in this document are based on electrical/electronic circuits designed and fabricated in accordance with the specifications listed in Table 1-1.

1.2 Purpose  This standard prescribes material requirements, process requirements, and acceptability requirements for the manufacture of soldered electrical and electronic assemblies. For a more complete understanding of this document’s recommendations and requirements, one may use this document in conjunction with IPC-HDBK-001, IPC-AJ-820 and IPC-A-610. Standards may be updated at any time, including with the addition of amendments. The use of an amendment or a newer revision is not automatically required.

1.3 Classification  This standard recognizes that electrical and electronic assemblies are subject to classifications by intended end-item use. Three general end-product classes have been established to reflect differences in manufacturability, complexity, functional performance requirements, and verification (inspection/test) frequency.

Use of this standard requires agreement on the class to which the product belongs. The User has the responsibility for identifying the class to which the assembly is produced. The product class should be stated in the procurement documentation package. If the User does not establish and document the acceptance class, the Manufacturer may do so.

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/Harsh Environment Electronic Products
Includes products where continued high performance or performance-on-demand is critical, equipment downtime cannot be tolerated, end-use environment may be uncommonly harsh, and the equipment must function when required, such as life support or other critical systems.

1.4 Measurement Units and Applications  This standard uses International System of Units (SI) units per ASTM SI10, IEEE/ASTM SI 10, Section 3 [Imperial English equivalent units are in brackets for convenience]. The SI units used in this standard are millimeters (mm) [in] for dimensions and dimensional tolerances, Celsius (°C) [°F] for temperature and temperature tolerances, grams (g) [oz] for weight, and lux for illuminance.

Note:  This standard uses other SI prefixes (ASTM SI10, Section 3.2) to eliminate leading zeroes (for example, 0.0012 mm becomes 1.2 µm) or as alternative to powers-of-ten (3.6 x 10³ mm becomes 3.6 m).