ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES®

IPC J-STD-006B

Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications

Developed by the Solder Alloy Task Group (5-24c) of the Assembly and Joining Processes Committee (5-20) of IPC

Supersedes:
J-STD-006A - May 2001
J-STD-006 - January 1995
Amendment 1 - July 1996

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

Contact:
IPC
3000 Lakeside Drive, Suite 309S
Bannockburn, IL 60015-1219
Phone (847) 615-7100
Fax (847) 615-7105

Table of Contents

Tables

Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications

1 SCOPE AND CLASSIFICATION

1.1 Scope This standard prescribes the nomenclature, requirements and test methods for electronic grade solder alloys; for fluxed and non-fluxed bar, ribbon, and powder solders, for electronic soldering applications; and for ''special'' electronic grade solders. This is a quality control standard and is not intended to relate directly to the material's performance in the manufacturing process. Solders for applications other than electronics should be procured using ASTM B-32.

This standard is one of a set of three joint industry standards that prescribe the requirements and test methods for soldering materials for use in the electronics industry:

IPC/EIA J-STD-004 Requirements for Soldering Fluxes

IPC/EIA J-STD-005 Requirements for Soldering Pastes

IPC J-STD-006 Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications

1.2 Classification Soldering alloys covered by this standard shall be classified by alloy composition and impurity level, solder form and dimensional characteristics peculiar to the solder form, flux percentage and flux classification, if applicable. These classifications shall be used as part of the standard description of solder products (see 6.3).

1.2.1 Alloy Composition The solder alloys covered by this standard include, but are not limited to, the alloys listed in Appendix A, including pure tin and pure indium. Each alloy is identified by an alloy name, which is composed of a series of alphanumeric characters that identify the component elements in the alloy by chemical symbol and nominal percentage by mass.

1.2.2 Alloy Impurity Level The allowable impurity level of the solder alloys covered by this standard is identified in 3.3. See 3.3.1 for the description of Variation D alloys. The alloy variation letter D is added to the end of an alloy name and becomes part of the alloy's name.

1.2.3 Solder Form The forms of solder materials covered by this set of standards include paste (cream), bar, powder, ribbon, wire and special electronic grade solders which do not fully comply with the requirements of standard solder alloys and forms listed herein. Some examples of special form solders are anodes, ingots, preforms, bars with hook and eye ends, and multiple-alloy solder powders. A single-letter identifying symbol as defined below may be used.

P − Paste (Cream)
B − Bar
D − Powder
R − Ribbon W − Wire
S − Special
H – Sphere

1.2.4 Dimensional Characteristics Standard bar solders are further classified by unit mass. Wire solders are further classified by wire size (outside diameter) and unit mass. Ribbon solders are further classified by thickness, width and unit mass. Powder solders are further classified by powder particle size distribution and unit mass (see 3.4.1 to 3.4.5).

1.2.5 Flux Percentage and Metal Content The nominal percentage of flux by mass in solid-form solder products shall be specified. For solder paste products, metal content shall be specified instead. ''Metal content'' refers to the percentage of metal in solder paste by mass (see 3.4.1 to 3.4.5).

1.2.6 Flux Classification The material of composition, activity level and halide content of fluxes covered by this set of standards shall be specified according to IPC/EIA J-STD-004.

2 APPLICABLE DOCUMENTS

The following documents form a part of this standard to the extent specified herein. Unless a specific issue is cited herein or in the contract or purchase order, the issue in effect on the date of invitation for bids or request for proposal shall apply.

2.1 Joint Industry Standards[1]

J-STD-004 Requirements for Soldering Fluxes

J-STD-005 Requirements for Soldering Pastes

1. www.ipc.org