IPC J-STD-004B

Requirements for Soldering Fluxes

A standard developed by the Flux Specifications Task Group (5-24a) of the Assembly and Joining Processes Committee (5-20) of IPC

Superseded:
J-STD-004A - January 2004
J-STD-004 - January 1995
Amendment 1 - April 1996

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

Contact:

IPC
3000 Lakeside Drive, Suite 309S
Bannockburn, Illinois 60015-1249
Tel 847 615.7100
Fax 847 615.7105

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1 SCOPE AND DESIGNATION

1.1 Scope This standard prescribes general requirements for the classification and characterization of fluxes for high quality solder interconnections. This standard may be used for quality control and procurement purposes.

1.2 Purpose The purpose of this standard is to classify and characterize tin/lead and lead-free soldering flux materials for use in electronic metallurgical interconnections for printed circuit board assembly. Soldering flux materials include the following: liquid flux, paste flux, solder paste, solder cream, and flux-coated and flux-cored solder wires and preforms. It is not the intent of this standard to exclude any acceptable flux or soldering material; however, these materials must produce the desired electrical and metallurgical interconnection.

The requirements for fluxes are defined in general terms for standard classification. Appendix B has additional information that will help users understand some of the requirements of this standard. In practice, where more stringent requirements are necessary or other manufacturing processes are used, the user **shall** define these as additional requirements.

1.3 Designation For ordering purposes and designation by other specifications, the following flux identification system **shall** be used (see Table 1-1).

1.4 Interpretation "Shall" The imperative form of the verb is used throughout this standard whenever a requirement is intended to express a provision that is mandatory. Deviation from a "**shall**" requirement may be considered if sufficient information is supplied to justify the exception.

Table 1-1 Flux Identification System

Flux Composition	Flux/Flux Residue Activity Levels	% Halide[1] (by weight)	Flux Type[2]	Flux Designator
Rosin (RO)	Low	<0.05%	L0	ROL0
		<0.5%	L1	ROL1
	Moderate	<0.05%	M0	ROM0
		0.5-2.0%	M1	ROM1
	High	<0.05%	H0	ROH0
		>2.0%	H1	ROH1
Resin (RE)	Low	<0.05%	L0	REL0
		<0.5%	L1	REL1
	Moderate	<0.05%	M0	REM0
		0.5-2.0%	M1	REM1
	High	<0.05%	H0	REH0
		>2.0%	H1	REH1
Organic (OR)	Low	<0.05%	L0	ORL0
		<0.5%	L1	ORL1
	Moderate	<0.05%	M0	ORM0
		0.5-2.0%	M1	ORM1
	High	<0.05%	H0	ORH0
		>2.0%	H1	ORH1
Inorganic (IN)	Low	<0.05%	L0	INL0
		<0.5%	L1	INL1
	Moderate	<0.05%	M0	INM0
		0.5-2.0%	M1	INM1
	High	<0.05%	H0	INH0
		>2.0%	H1	INH1

1. Halide measuring <0.05% by weight in flux solids and may be known as halide-free. This method determines the amount of ionic halide present (see Appendix B-10).
2. The 0 and 1 indicate the absence or presence of halides, respectively. See paragraph 3.3.1.2.2 for flux type nomenclature.