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Flux Classification – Part 1

Interpretation of J-STD-001 and J-STD-004 Regarding Fluxes

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IPC J-STD-001D
February 2005
Supersedes Revision C March 2000

**JOINT
INDUSTRY
STANDARD**

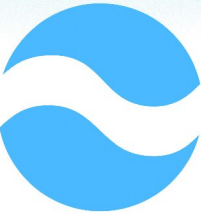

Requirements for
Soldered Electrical
and Electronic
Assemblies



IPC J-STD-004A
JANUARY 2004
Supersedes J-STD-004
January 1995

**JOINT
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Requirements for
Soldering Fluxes





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Material and Process Nonconformance

J-STD-001

- 1.5.2. *Hardware found to be produced using either materials or processes that do not conform to the requirements of this standard **shall** be dispositioned when the condition is a defect listed in the applicable text box.*

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Material Requirements

J-STD-001

- 3.1 *The materials and processes used to assemble/manufacture electronic assemblies **shall** be selected such that their use, in combination, produce products acceptable to this standard.*

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Material Requirements

J-STD-001

- *When major elements are changed:*
 - *Flux*
 - *Solder paste*
 - *Cleaning media*
 - *Solder*
 - *Soldering system*

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Material Requirements

J-STD-001

- *Validation of the acceptability of the change(s) **shall** be performed and documented.*
- *This also applies to changes in board suppliers.*
- *Solder resists or solder mask.*
- *Metallization*

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J-STD-001 D

3.3 Flux

- Flux **shall** be in accordance with J-STD-004 or equivalent.²
- Flux **shall** conform to flux activity levels L0 and L1 of flux materials rosin (RO), resin (RE), or organic (OR).³
- Organic flux activity level L1 **shall not** be used for no-clean soldering.³



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J-STD-001 D

3.3 Flux

- *When other activity levels or flux materials are used, compatibility data **shall** be available for review. ³*
- *Type H or M fluxes **shall not** be used for tinning of stranded wires (see 3.1). ²*
- *Note: Flux or solder paste soldering process combinations previously tested or qualified in accordance with other specifications do not require additional testing.*



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J-STD-004 Requirements for Soldering Fluxes

3.3.2.1 Activity

- Fluxes shall be further classified by test requirements (see Table 3-1 and Figure 3-1) relating to the activity of the flux and its residue.

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J-STD-004 Requirements for Soldering Fluxes

- Fluxes shall be characterized according to one of the following three types:
 - L = Low or no flux/flux residue activity
 - M = Moderate flux/flux residue activity
 - H = High flux/flux residue activity

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Table 1-1 Flux Identification System

| Materials of Composition ² | Flux/Flux Residue Activity Levels | % Halide ³ (by weight) | Flux Type ³ | Flux Designator |
|---------------------------------------|-----------------------------------|-----------------------------------|------------------------|-----------------|
| Rosin (RO) | Low | 0.0% | L0 | ROL0 |
| | | <0.5% | L1 | ROL1 |
| | Moderate | 0.0% | M0 | ROM0 |
| | | 0.5-2.0% | M1 | ROM1 |
| | High | 0.0% | H0 | ROH0 |
| | | >2.0% | H1 | ROH1 |
| Resin (RE) | Low | 0.0% | L0 | REL0 |
| | | <0.5% | L1 | REL1 |
| | Moderate | 0.0% | M0 | REM0 |
| | | 0.5-2.0% | M1 | REM1 |
| | High | 0.0% | H0 | REH0 |
| | | >2.0% | H1 | REH1 |

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Table 1-1 Flux Identification System

| Materials of Composition ² | Flux/Flux Residue Activity Levels | % Halide ³ (by weight) | Flux Type ³ | Flux Designator |
|---------------------------------------|-----------------------------------|-----------------------------------|------------------------|-----------------|
| Organic (OR) | Low | 0.0% | L0 | ORL0 |
| | | <0.5% | L1 | ORL1 |
| | Moderate | 0.0% | M0 | ORM0 |
| | | 0.5-2.0% | M1 | ORM1 |
| | High | 0.0% | H0 | ORH0 |
| | | >2.0% | H1 | ORH1 |
| Inorganic (IN) | Low | 0.0% | L0 | INL0 |
| | | <0.5% | L1 | INL1 |
| | Moderate | 0.0% | M0 | INM0 |
| | | 0.5-2.0% | M1 | INM1 |
| | High | 0.0% | H0 | INH0 |
| | | >2.0% | H1 | INH1 |

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Upcoming . . .

On **October 17th**
we will present Part 2 of this
Flux Classification Webinar --
**“Selecting the Right Flux For Your
Application”**



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Further Information

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