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Soft soldering fluxes — Classification and requirements —

Part 2: Performance requirements

*Flux de brasage tendre — Classification et caractéristiques —
Partie 2: Prescriptions de performance*

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 12, *Soldering materials*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 9454-2:1998), of which it constitutes a minor revision.

The main changes compared to the previous edition are as follows:

- [Clause 2](#) has been updated;
- the coding of the fluxes has been updated in accordance with ISO 9454-1:2016;
- the format of this document has been updated.

A list of all parts in the ISO 9454 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Fluxes assist molten solder to wet metals surfaces to be joined by removing oxides and related contaminants from the solder and surfaces of the parts during soldering. Fluxes also protect surfaces from oxidization and assist wetting of the base metals by molten solder.

Care is necessary when selecting a flux for a particular application, in order to ensure an adequate service life of the assembly. Factors such as the ease of residue removal, corrosiveness, possible health and safety hazards and the efficacy of the flux, should all be considered when making the choice.

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Soft soldering fluxes — Classification and requirements —

Part 2: Performance requirements

1 Scope

This document specifies the performance requirements for fluxes in solid, liquid and paste forms intended for use with soft solders.

NOTE 1 ISO 9454-1 specifies the requirements for labelling and packaging as well as the coding system for the classification of the fluxes.

NOTE 2 Some of the fluxes intended for inert gas and vapour phase soldering may not pass some of the criteria in [Tables 1](#) and [2](#).

Requirements for these fluxes are agreed between the purchaser and the supplier.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9455-3:2019, *Soft soldering fluxes — Test methods — Part 3: Determination of acid value, potentiometric and visual titration methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 flux

chemical substance in a form which assists molten solder to wet metal surfaces to be joined, by removing oxides and related contaminants from the solder and from the surfaces of the parts during soldering

Note 1 to entry: Flux can be in solid, liquid or paste form.

3.2 liquid flux

solution of a flux in a suitable liquid solvent

3.3 paste flux

solution or uniform dispersion of flux in a suitable viscous medium

**3.4
colophony (rosin)**

hard, natural resin, extracted from the oleoresin of pine trees and refined, consisting of abietic and pimaric acids and their isomers, some organic fatty acids and terpene hydrocarbons

Note 1 to entry: These natural rosins, or modified rosins, should give a positive reaction to the Liebermann and Storch test [4] and shall have an acid value greater than 155 mg KOH/g.

**3.5
resin**

general, non-specific, widely accepted term for natural and synthetic resinous products

**3.6
activator**

substance which increases the chemical reactivity of a flux

**3.7
organic type flux**

flux which is based on non-rosin organic substances

**3.8
inorganic type flux**

flux containing inorganic acids or alkalis, or their salts

4 Flux condition

Solid fluxes shall be of uniform composition and be free from foreign matter or impurities deleterious to the fluxing action.

Liquid fluxes shall be homogeneous and free from sediment.

Paste fluxes shall be of a uniform viscous form and of a consistency suitable for application to the surface to be soldered.

5 Performance requirements for fluxes

When tested in accordance with the appropriate test methods given in the various parts of the ISO 9455 series, fluxes shall comply with the requirements given in [Tables 1 to 3](#).

When determining the acid value for type 2 fluxes in accordance with ISO 9455-3:2019, the value for *S* in ISO 9455-3:2019, 4.5 of the method is to be taken as 100.

NOTE It is worth noting that, because of the difference between the chemicals in flux types 1 and 2, the values for acid value (see ISO 9455-3), and for halide content (see ISO 9455-6), are expressed on different bases and are not, therefore, comparable.

