

**AWS A5.31M/A5.31:2022**  
**An American National Standard**

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# **Specification for Fluxes for Brazing and Braze Welding**



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An American National Standard**

**Approved by the  
American National Standards Institute  
January 7, 2022**

# **Specification for Fluxes for Brazing and Braze Welding**

**3rd Edition**

**Revises AWS A5.31M/A5.31:2012**

Prepared by the  
American Welding Society (AWS) A5 Committee on Filler Metals and Allied Materials

Under the Direction of the  
AWS Technical Activities Committee

Approved by the  
AWS Board of Directors

## **Abstract**

This specification prescribes the requirements for classification of eighteen fluxes for brazing and braze welding. They are classified according to the filler metal, form, and activity temperature range. Classification is in accordance with a classification system that employs the designator “FB” to indicate fluxes for brazing and braze welding applications. In addition to selected tests for each classification, major topics include general requirements, testing procedures, and packaging requirements. A guide is appended to the specification as a source of information concerning the classification system employed and the intended use of the brazing fluxes.

This specification makes use of both U.S. Customary Units and the International System of Units (SI). Since these are not equivalent, each system must be used independently of the other.



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## Foreword

This foreword is not part of this standard but is included for informational purposes only.

This document makes use of both the International System of Units (SI) and U.S. Customary Units. The measurements are not exact equivalents; therefore, each system must be used independently of the other without combining values in any way. In selecting rational metric units, AWS A1.1, *Metric Practice Guide for the Welding Industry*, and International Standard ISO 544, *Welding Consumables—Technical Delivery Conditions for Welding Filler Materials—Type of Product, Dimensions, Tolerances, and Markings*, are used where suitable. Tables and figures make use of both SI Units and U.S. Customary Units which, with the application of the specified tolerances, provides for interchangeability of products in both the SI Units and U.S. Customary Units.

The current document is the second revision of the original specification issued in 1992. In 1978, the American Welding Society's Brazing and Soldering Committee recognized the need for a flux specification. About two years later, collaboration between the Committee on Filler Metals and Allied Materials and the Subcommittee on Filler Metals and Fluxes for Brazing led to the initial preparation of the specification. At that point, the magnitude of the challenge to prepare a specification in an industry built on a foundation of proprietary products became apparent. After over a decade of activity by a dedicated group of brazing specialists, the first National Specification, AWS/ANSI A5.31-92, was issued.

The evolution took place as follows:

ANSI/AWS A5.31-92

ANSI/AWS A5.31-92 (R2003)

AWS A5.31M/A5.31:2012

Substantive changes included in this revision include the following. These substantive changes are shown in *italic font*.

*Addition of ISO 80000-1, Quantities and units—Part 1: General to the Normative References*

*A note was added to Table 1 regarding non-classified aluminum fluxes*

*Shelf life language was moved to Annex B (Informative)*

*Revised requirements for retests*

*Revised requirements for preparing the surfaces of test specimens*

*Figure 1 was redrawn for clarification*

*Revised requirements for water content tests, adhesion tests, fluidity tests, fluxing action tests, flow tests, and life tests*

*Method of manufacture was revised*

*The requirements for forms were revised*

*The requirements for marking of packages were revised*

*The flux classification system was clarified in Annex B*

*The description of brazing fluxes in Annex B were revised*

*Non-classified flux groups were added to Annex B*

*General safety considerations in Annex B were revised*



The user's attention is called to the possibility that compliance with this standard may require use of an invention covered by patent rights. By publication of this standard, no position is taken with respect to the validity of any such claim(s) or of any patent rights in connection therewith. If a patent holder has filed a statement of willingness to grant a license under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license, then details may be obtained from the standards developer.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, Committee on Filler Metals and Allied Materials, American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

All errata to a standard shall be published in the *Welding Journal* and posted on the AWS website.

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# Specification for Fluxes for Brazing and Braze Welding

## 1. Scope

**1.1** This specification prescribes the requirements for the classification of brazing fluxes used with brazing or braze welding filler metals such as those classified in AWS A5.8M/A5.8, *Specification for Filler Metals for Brazing and Braze Welding*.

**1.2** This specification makes use of both the International System of Units (SI) and U.S. Customary Units. The measurements are not exact equivalents; therefore, each system must be used independently of the other without combining in any way when referring to material properties. The specification with the designation A5.31M uses SI Units. The specification A5.31 uses U.S. Customary Units. The latter are shown within brackets [ ] or in appropriate columns in tables and figures. Standard dimensions based on either system may be used for sizing of brazing fluxes or packaging or both under A5.31M or A5.31 specifications.

**1.3** *Safety and health issues and concerns are beyond the scope of this standard; some safety and health information is provided, but such issues are not fully addressed herein. Some safety and health information can be found in Annex Clauses B6 and B9.*

Safety and health information is available from the following sources:

American Welding Society:

- (1) ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*
- (2) AWS Safety and Health Fact Sheets (see Annex Clause B9)
- (3) Other safety and health information on the AWS website

Material or Equipment Manufacturers:

- (1) Safety Data Sheets supplied by the materials manufacturers
- (2) Operating Manuals supplied by equipment manufacturers

Applicable Regulatory Agencies

Work performed in accordance with this standard may involve the use of materials that have been deemed hazardous, and may involve operations or equipment that may cause injury or death. This standard does not purport to address all safety and health risks that may be encountered. The user of this standard should establish an appropriate safety program to address such risks as well as to meet applicable regulatory requirements. ANSI Z49.1 should be considered when developing the safety program.

## 2. Normative References

The documents listed below are referenced within this publication and are mandatory to the extent specified herein. Unless otherwise defined in this document, terms are as defined in AWS A3.0M/A3.0. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply.