

N-02-70

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AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 3412C

Issued 5-1-48
Revised 4-1-87

Superseding AMS 3412B

FLUX, ALUMINUM BRAZING

1. SCOPE:

- 1.1 Form: This specification covers an aluminum brazing flux in the form of powder.
- 1.2 Application: Primarily for brazing aluminum and aluminum alloys at 1050°F (565°C) and above.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

- 2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.
- 2.1.1 Aerospace Material Specifications:
AMS 2350 - Standards and Test Methods
- 2.2 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.
- 2.2.1 Military Standards:
MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

- 3.1 Material: Flux shall be a finely ground and uniformly blended mixture, free of all substances which might adversely affect its serviceability. It shall contain not more than 5% water by weight.

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3.1.1 Flux shall not harden in the container. A slight amount of agglomeration is permissible provided the lumps can be readily broken into a powder not coarser than the remainder of the material.

3.2 Properties: Flux shall conform to the following requirements:

3.2.1 Flux, mixed with water in the proportions of 3 to 1 by weight, with or without a suitable wetting agent, shall form a smooth paste free from coarse particles, and having acceptable fusibility and acceptable application and fluxing characteristics. Flux shall permit production of satisfactorily brazed joints of any type on applicable aluminum alloys when used in conjunction with aluminum brazing alloys. Methods of determining acceptability of flux performance shall be as agreed upon by purchaser and vendor.

3.2.2 On heating, flux shall fuse at 1050°F (565°C) or lower; on cooling from 1100°F (595°C) or higher, flux shall remain in the liquid state until the temperature drops to 1050°F (565°C) or lower.

3.2.3 Flux shall not produce, during use, a flame or smoke of sufficient intensity to obscure the work.

3.2.4 Flux shall not produce toxic or suffocating fumes under normal conditions of use.

3.2.5 Flux should be readily removed by water at 190°F (90°C) or hotter after being subjected to brazing operations. If the flux is not completely removed by the hot water but is removed by immersion in a 10% solution of nitric acid, to which 0.25% hydrofluoric acid is added, for not more than 15 min. at not higher than 100°F (38°C), followed by a final hot water rinse, flux is acceptable.

3.3 Quality: Flux, as received by purchaser shall be uniformly blended and free from all substances which might affect its usability.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of flux shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the flux conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and as preproduction tests and shall be performed prior to or on the initial shipment of flux to a purchaser, on each lot, when a change in material, processing, or both requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.3 Sampling: At least one sample shall be taken at random from each lot; a lot \emptyset shall be all flux produced in a single production run from the same batches of raw materials and presented for vendor's inspection at one time. A lot may be packaged and delivered in small quantities under the basic lot approval provided lot identification is maintained.

4.4 Approval:

4.4.1 Sample flux shall be approved by purchaser before flux for production use is supplied, unless such approval be waived by purchaser. Results of tests on production flux shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production flux which are essentially the same as those used on the approved sample flux. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material, processing, or both and, when requested, sample flux. Production flux made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Reports:

4.5.1 The vendor of flux shall furnish with each shipment a report stating that the flux conforms to the technical requirements of this specification. This report shall include the purchase order number, AMS 3412C, lot number, date of manufacture, and quantity.

4.5.2 When assemblies requiring use of this flux are supplied, the assembly manufacturer shall inspect each lot of flux to determine conformance to the technical requirements of this specification and shall furnish with each shipment a report stating that the flux conforms. This report shall include the purchase order number, AMS 3412C, assembly number, and quantity.

4.6 Resampling and Retesting: If any sample used in the above tests fails to meet the specified requirements, disposition of the flux may be based on the results of testing three additional samples for each original nonconforming sample. Failure of any retest sample to meet the specified requirements shall be cause for rejection of the flux represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Identification: Each package of flux shall be permanently and legibly marked with not less than the following information:

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FLUX, ALUMINUM BRAZING

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PURCHASE ORDER NUMBER _____

MANUFACTURER'S NAME _____

MANUFACTURER'S DESIGNATION _____

LOT NUMBER _____

DATE OF MANUFACTURE _____

DIRECTIONS FOR MIXING AND APPLICATION _____

WEIGHT OF CONTENTS _____

5.2 Packaging:

5.2.1 Flux shall be supplied in 4 oz (110 g), 8 oz (225 g), 16 oz (450 g), or 5 lb (2.25 kg) glass or plastic containers, as ordered.

5.2.2 Containers of flux shall be suitably wrapped, sealed, and boxed or otherwise packaged for protection against injury and contamination during shipment and under normal dry storage conditions.

5.2.3 Packages of flux shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the flux to ensure carrier acceptance and safe delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

5.2.4 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.2.1, 5.2.2, and 5.2.3 will be acceptable if it meets the requirements of Level C.

6. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS: Flux not conforming to this specification or to modifications authorized by purchaser will be subject to rejection.

8. NOTES:

8.1 Marginal Indicia: The phi (∅) symbol is used to indicate technical changes from the previous issue of this specification.

8.2 Dimensions in inch/pound units and the Fahrenheit temperatures are primary; dimensions in SI units and the Celsius temperatures are shown as the approximate equivalents of the primary units and are presented only for information.