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AEROSPACE MATERIAL SPECIFICATION

AMS 3415A
Superseding AMS 3415

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FLUX, ALUMINUM DIP BRAZING
1030°F (555°C) or Lower Liquidus

1. SCOPE:

1.1 Form: This specification covers an aluminum brazing flux in granular form.

1.2 Application: Primarily for dip brazing of aluminum and aluminum alloys at temperatures above 1050°F (565°C).

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
AMS 2673 - Aluminum Molten Flux (Dip) Brazing
AMS 4001 - Aluminum Sheet and Plate (1100-0)
AMS 4054 - Aluminum Alloy Sheet, Clad One Side, 0.6Mg - 0.35Si - 0.28Cu (No. 21-0 Brazing Sheet)
AMS 4055 - Aluminum Alloy Sheet, Clad Two Sides, 0.6Mg - 0.35Si - 0.28Cu (No. 22-0 Brazing Sheet)
AMS 4184 - Filler Metal, Aluminum Brazing, 10Si - 4.0Cu (4145)
AMS 4185 - Filler Metal, Aluminum Brazing, 12Si (4047)

2.2 U.S. Government Publications: Available from Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.2.1 Federal Specifications:

QQ-B-655 - Brazing Alloys, Aluminum and Magnesium, Filler Metal

2.2.2 Military Specifications:

MIL-B-20148 - Brazing Sheet, Aluminum Alloy

2.2.3 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Material: The flux shall be a uniformly blended mixture, primarily metallic Ø chlorides with the addition of metallic fluorides, and shall contain not more than 5% by weight of water.

3.1.1 The flux shall produce satisfactory brazed joints of any type in Ø accordance with AMS 2673 on aluminum or aluminum alloys when used in conjunction with aluminum brazing alloys.

3.2 Properties: Flux shall conform to the following requirements:

3.2.1 On heating or cooling, flux shall be fully molten at 1030°F (555°C). The liquidus of the flux shall be 1030°F (555°C) or lower.

3.2.2 Flux shall not etch parent metal to an extent greater than indicated by the following test:

3.2.2.1 A coupon of AMS 4001 aluminum, or equivalent, 0.025 x 1 x 6 in. (0.62 x 25 x 150 mm), immersed for 2 min. ± 0.2 in a bath of dehydrated molten flux at 1120°F ± 10 (605°C ± 5) shall not be reduced more than 0.001 in. (0.025 mm) in thickness.

3.2.3 Flux adhering to brazed assemblies shall be removable by either: 1) water at 190°F (90°C) or hotter or 2) by the hot water followed 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 (40°C).

3.3 Quality: Flux, as received by purchaser, shall be a uniformly blended Ø mixture free from all substances which might affect its serviceability.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of flux shall supply all samples Ø 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 Ø requirements of this specification are classified as acceptance tests and shall be performed on each lot.

4.3 Sampling: At least one randomly selected sample of flux from each lot; a Ø lot shall be all flux in an identifiable quantity processed at one time and presented for vendor's inspection at one time.

4.4 Reports: The vendor of flux shall furnish with each shipment a report Ø stating that the flux conforms to the technical requirements of this specification. This report shall include the purchase order number, AMS 3415A, lot number, date of manufacture, and quantity.

4.5 Resampling and Retesting: If any sample used in the above tests fails to Ø 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 Ø marked with not less than the following information:

FLUX, ALUMINUM DIP BRAZING
AMS 3415A
WEIGHT OF CONTENTS _____
MANUFACTURER'S NAME _____
MANUFACTURER'S DESIGNATION _____
LOT NUMBER _____
DATE OF MANUFACTURE _____
PURCHASE ORDER NUMBER _____

5.2 Packaging:

5.2.1 Flux shall be supplied in 8 oz. (225 g), 16 oz. (450 g), or 5 lb Ø (2.25 kg) glass or plastic containers, and 50 lb (22.5 kg), 100 lb (45 kg), 200 lb (90 kg), and 400 lb (180 kg) fiber drums with an interior polyethylene bag sealed by a twisted plastic coated wire, or the flux shall be supplied in 100 lb (45 kg) self-sealing 6 mil (0.15 mm) low-density polyethylene bags, stacked on a wooden pallet for bulk shipments.

5.2.2 The drums or bags shall be prepared for shipment in accordance with Ø commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the product to ensure carrier acceptance and safe delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

5.2.3 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 and 5.2.2 will be acceptable if it meets the requirements of Level C.