AEROSPACE MATERIAL SPECIFICATION

AMS3430	REV. E

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Superseding AMS3430D

Brazing Filler Metal, Paste, Copper Water Thinning

RATIONALE

AMS3430E stabilizes this document because the technology is deemed to be unlikely to change in the future.

STABILIZATION NOTICE

AMS3430E has been declared "STABILIZED" by AMS Committee D. This document will no longer be updated and may no longer represent standard industry practice. The last technical update of this document occurred in June, 2008. Users of this document should refer any certification issues (e.g. exceptions listed on the certification report) to the cognizant engineering organization for their disposition. CAUTION: In many cases the purchaser is not the cognizant engineering organization (i.e. purchaser may be a sub tier supplier).

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1. SCOPE

1.1 Form

This specification covers a copper brazing filler metal in the form of a paste comprising a viscous mixture of powder in a suitable binder.

1.2 Application

This product has been used typically for joining carbon and low-alloy steels and corrosion and heat resistant steels and alloys where high strength, good ductility, and only short-time oxidation resistance above 1000 °F (538 °C) are required, but usage is not limited to such applications. Used where inserts of copper wire or sheet are impractical and where carburization of the metals being joined is undesirable.

1.3 Classification

The brazing filler metal pastes covered by this specification are classified as follows:

Type 1: The active ingredient is composed of cupric and cuprous oxides and metallic copper.
Type 2: The active ingredient is composed of metallic copper.

1.4 Safety - Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B 214 Sieve Analysis of Granular Metal Powders
ASTM E 478 Chemical Analysis of Copper Alloys

3. TECHNICAL REQUIREMENTS

3.1 Composition

3.1.1 Paste shall conform to the requirements shown in Table 1.

TABLE 1 - COMPOSITION OF PASTE

Material	Percent min	Percent max
Active ingredient	70.0	--
Vehicle	--	30.0

3.1.2 Active Ingredient Composition

Shall conform to the following, determined by wet chemical methods in accordance with ASTM E 478, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

3.1.2.1 Type 1

Shall be 97% cuprous oxide (Cu_2O). The remainder shall be cupric oxide (CuO) and copper metal powder.

3.1.2.2 Type 2

Shall be 99.0% minimum metallic copper with not more than 0.30% other elements. The remainder may be copper oxide. Oxygen shall not be included with other elements in the analysis.

3.1.2.3 Vehicle

Shall be a water based mixture containing organic additives for thickening such as ethylene glycol, algin, petroleum sulfonate, or other organic additives as required.

3.1.2.4 Where no type is specified, Type 1 shall be supplied.

3.2 Condition

Paste shall be supplied as mixed and shall not contain flux.

3.3 Brazability

Paste shall be applied to a steel test panel, heated to 2050 °F ± 25 (1121 °C ± 14) in a hydrogen atmosphere having a dew point not higher than -40 °F (-40 °C), held at heat for 30 minutes ± 2, and cooled to 1000 °F (538 °C) or lower in a protective atmosphere. The active ingredient shall be reduced completely to metallic copper and shall melt and flow freely. The vehicle and emulsifying agent shall burn off leaving no carbonaceous residue and shall not cause carburization of the panel.

3.4 Shelf Life

Shall be not less than six months from date of shipment when paste is stored in manufacturer's sealed containers; not more than thorough mixing shall be required to restore paste for use during that time.

3.5 Quality

Paste, as received by purchaser, shall be uniform in quality and condition and free from foreign materials and from imperfections detrimental to usage of the product. Paste, diluted with water or other appropriate miscible solvent as required, shall have acceptable application characteristics.

3.6 Sizes and Tolerances

The active ingredients shall be of such fineness that for Type 1, not more than 0.5% by weight shall be retained on a No. 325 (45 µm) screen, and for Type 2 not more than 10% by weight shall be retained on a No. 325 (45 µm) screen and not more than 0.5% shall be retained on a No. 200 (µm) screen, determined in accordance with ASTM B 214 or by other method acceptable to purchaser.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of paste shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the paste conforms to specified requirements.

4.2 Classification of Tests

4.2.1 Acceptance Tests

All technical requirements except shelf life are acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests

Shelf life is a preproduction test and shall be performed prior to initial shipment of the product and after any change to the product (See 4.4).

4.3 Sampling and Testing

Shall be in accordance with the following; a lot shall be all paste produced from a single lot of powder combined with binder from the same manufacturing batch and presented for vendor's inspection at one time.

4.3.1 Composition

One sample from each lot.

4.4 Identification

Product shall be assigned an identifying name, code, or revision letters or numbers traceable to a specific set and proportion of ingredients, raw materials, methods of manufacture and quality assurance methods. That identifying name, code, or revision letters or numbers shall be changed if there are any changes to the set and proportions of ingredients, raw materials, methods of manufacture, or quality assurance methods.

4.5 Reports

The vendor of paste shall furnish with each shipment a report showing the results of tests on each lot to determine conformance to the composition requirements and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, manufacturer's identification, lot number, AMS3430E, and quantity.