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| AEROSPACE MATERIAL SPECIFICATION | AMS4765™ | REV. F |
| | Issued 1968-04 Reaffirmed 2009-06 Revised 2015-12 Superseding AMS4765E | |
| Silver Alloy, Brazing Filler Metal 56Ag – 42Cu – 2.0Ni 1420 to 1640 °F (771 to 893 °C) Solidus-Liquidus Range (Composition similar to UNS P07560) | | |

RATIONALE

AMS4765F incorporates the industry standard requirements of AWS A5.8 and is a Five Year Review and update of this specification.

1. SCOPE

1.1 Form

This specification covers a silver alloy in the form of wire, rod, sheet, strip, foil, pig, powder, shot, and chips, and a viscous mixture (paste) of powder in a suitable binder.

1.2 Application

This material has been used typically for joining ferrous metals, particularly austenitic steels and alloys, by atmosphere furnace brazing without flux, where high joint strength up to 800 °F (427 °C) is required, or for nonferrous metals except those having a base of titanium, aluminum or magnesium, but usage is not limited to such applications.

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 AWS Publications

Available from American Welding Society, 8669 NW 36 Street, #130, Miami, FL 33166-6672, Tel: 1-800-443-9353 or 305-443-9353, www.aws.org.

AWS A5.8M/A5.8 Specification for Filler Metals for Brazing and Braze Welding

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2.2 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2222 Tolerances, Copper and Copper Alloy Sheet, Strip, and Plate

AMS2224 Tolerances, Copper and Copper Alloy Wire

2.3 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 B214 Sieve Analysis of Granular Metal Powders

3. TECHNICAL REQUIREMENTS

Products shall meet the requirements of AWS A5.8 BAg-13a and the following:

3.1 Condition

As fabricated unless otherwise specified.

3.1.1 Paste

Paste not containing flux (3.1.1.1) shall be supplied unless paste containing flux (3.1.1.2) is specified.

3.1.1.1 Paste Without Flux

Shall consist of 84 to 90% by weight powder in a suitable binder, unless otherwise specified by purchaser.

3.1.1.2 Paste Containing Flux

Shall consist of 55 to 80% by weight powder in a suitable binder and flux combination, unless otherwise specified by purchaser.

3.1.1.3 Paste shall have a shelf life of not less than six months from date of manufacture; not more than thorough mixing shall be required to restore paste for use during that time.

3.1.1.4 Paste without flux shall leave no adherent residue when heated in a protective atmosphere to 1000 °F (538 °C) or higher.

3.2 Quality

The product, as received by purchaser, shall be uniform in color, quality, condition, free from foreign materials and from imperfections detrimental to usage of the filler metal. Wire, rod, sheet, strip, and foil shall be clean, sound, bright, free from slivers, splitting, ragged edges, damaged ends, and other injurious imperfections. Pig, powder, shot, and chips shall have a metallic luster.

3.3 Sizes and Tolerances

The product shall be supplied in the following standard sizes and to the tolerances shown:

3.3.1 Wire and Rod

3.3.1.1 Nominal Diameters

Table 1 - Standard diameter sizes

| Inch | | Millimeters | |
|-------|-------|-------------|------|
| 0.005 | 0.062 | 0.13 | 1.57 |
| 0.007 | 0.094 | 0.18 | 2.39 |
| 0.010 | 0.125 | 0.25 | 3.18 |
| 0.015 | 0.175 | 0.38 | 4.44 |
| 0.025 | 0.188 | 0.64 | 4.78 |
| 0.031 | 0.225 | 0.79 | 5.72 |
| 0.040 | 0.250 | 1.02 | 6.35 |
| 0.047 | | 1.19 | |

3.3.1.2 Diameter Tolerances for Wire and Rod

When not specified by AWS A5.8, AMS2224 as applicable to refractory alloys.

3.3.2 Sheet, Strip, and Foil

3.3.2.1 Nominal Thicknesses

Table 2 - Standard thicknesses

| Inch | | Millimeter | |
|--------|-------|------------|------|
| 0.001 | 0.006 | 0.025 | 0.15 |
| 0.0015 | 0.008 | 0.038 | 0.20 |
| 0.002 | 0.010 | 0.05 | 0.25 |
| 0.003 | 0.014 | 0.08 | 0.36 |
| 0.004 | 0.020 | 0.10 | 0.51 |
| 0.005 | 0.030 | 0.13 | 0.76 |

3.3.2.2 Tolerances

In accordance with AWS A5.8, except that no roll shall weigh more than 75 pounds (34 kg).

3.3.3 Powder Sizes

3.3.3.1 Mesh Designations

60, 100, 140, 200, and 325.

3.3.3.2 Powder shall be supplied in accordance with the limits on particle size distribution shown in Table 3, unless some other distribution is specified. Tests shall be in accordance with ASTM B214.

Table 3 - Particle size distribution

| Mesh Designation | U.S. Standard Sieve | |
|------------------|---------------------------|--------------|
| 60 | Through a No. 40 sieve - | 100% |
| | Through a No. 60 sieve - | 95% minimum |
| | Through a No. 325 sieve - | 10% maximum |
| 100 | Through a No. 60 sieve - | 100% |
| | Through a No. 100 sieve - | 95% minimum |
| | Through a No. 325 sieve - | 15% maximum |
| 140C | On a No. 100 sieve - | 0.5% maximum |
| | On a No. 140 sieve - | 10% maximum |
| | Through a No. 325 sieve - | 20% maximum |
| 140F | On a No. 100 sieve - | 0.5% maximum |
| | On a No. 140 sieve - | 10% maximum |
| | Through a No. 325 sieve - | 55% maximum |
| 200 | On a No. 140 sieve - | 0.5% maximum |
| | On a No. 200 sieve - | 10% maximum |
| | Through a No. 325 sieve - | 65% maximum |
| 325 | On a No. 200 sieve - | 0.5% maximum |
| | On a No. 325 sieve - | 10% maximum |
| | Through a No. 325 sieve - | 90% minimum |

3.3.3.2.1 When mesh designation is not specified, 140F mesh shall be supplied.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of the product 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 product conforms to the specified requirements.

4.2 Classification of Tests

4.2.1 Acceptance Tests

All technical requirements, except shelf life of paste (3.1.1.3), are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests

Shelf life of paste (3.1.1.3) is a periodic test and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing

Shall be in accordance with the following:

4.3.1 Composition

For all product except powder, one sample from each lot; for powder, one sample from each furnace charge.

4.3.2 Other Technical Requirements

As agreed upon by purchaser and vendor.