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AEROSPACE MATERIAL SPECIFICATION

AMS 2814D
Superseding AMS 2814C

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PACKAGING OF WELDING WIRE
Premium Quality

1. SCOPE: This specification covers spooling and packaging of bare welding wire to ensure cleanliness and freedom from corrosion, spool sizes and weights of spooled wire, and package weights of cut lengths.

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

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2815 - Identification, Welding Wire, Line Code System
AMS 2816 - Identification, Welding Wire, Color Code System

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 Specifications:

MIL-W-10430 - Welding Rods and Electrodes, Preparation for Delivery of

3. TECHNICAL REQUIREMENTS:

3.1 Preparation: Prior to winding on spools or cutting to length, wire shall be uncoiled for cleaning ø and shall be rendered free of dirt, grease, oil, corrosion, and other surface contamination which would interfere with welding.

3.2 Packaging: Shall be performed in an atmosphere of sufficiently low humidity, depending upon the corrosion rate of the alloy, to ensure that wire will not be corroded during the packaging operation. Wire, after cleaning preparatory to packaging, shall not be handled with bare hands or unclean gloves.

3.2.1 Spooled Wire:

3.2.1.1 Spools shall be of such materials and construction as to provide sufficient strength and rigidity ø to prevent damage to, or distortion of, the wire during normal handling and use. The materials shall not induce corrosion of the wire and shall electrically insulate the wire from the spindle of the welding machine.

3.2.1.2 Configuration and dimensions of spools shall conform to Fig. 1 and Table I. The size of spool ø shall be selected on the basis of the alloy and quantity ordered. Each spool shall provide access to approximately 8 in. (200 mm) of wire at the inside end of the coil for sampling purposes; a groove in the outer face of one flange, adjacent to the barrel, is acceptable.

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3.2.1.3 Ø Wire on each spool shall be one continuous length from the same heat of alloy, except in the case of aluminum and magnesium which are not restricted, unless otherwise permitted by purchaser. Welding to form a continuous length is permissible if performed prior to the final drawing operation.

3.2.1.4 Ø Wire shall be furnished on spools containing approximately the ordered spool net weight except that up to 20% of the net weight of any one combination of alloy, wire diameter, and spool size in a shipment may be on spools containing not less than 50% of the ordered spool net weight.

3.2.1.5 Ø Wire shall be closely wound in layers but adjacent turns within a layer need not necessarily be touching; shall be wound so as to avoid producing kinks, waves, and sharp bends; and shall be free to unwind without restriction caused by overlapping or wedging. The outside end of the spooled wire shall be so treated that it may be readily located.

3.2.1.6 Net weight of wire on spools shall be as specified in Table II for the alloy type ordered.

TABLE II

Alloy Type	Spool Net Weight, lb
Aluminum	1, 10, 12-1/2, 15
Magnesium	3/4, 1, 9, 10
Titanium	1, 10, 20
Copper	25, 50
Steel, Corrosion Resistant Alloys, and Refractory Alloys	1-1/2, 2-1/2, 25, 35, 50, 60

TABLE II (SI)

Alloy Type	Spool Net Weight, kg
Aluminum	0.5, 5, 6, 7
Magnesium	0.4, 0.5, 4, 5
Titanium	0.5, 5, 9
Copper	11, 23
Steel, Corrosion Resistant Alloys, and Refractory Alloys	0.7, 1.1, 11, 16, 23, 27

3.2.1.7 Spooled wire shall be packaged in hermetically sealed containers with a desiccant or a dry, inert atmosphere, or both, unless otherwise specified. When specified the hermetically sealed containers shall be so designed that they can be used for storage after opening.

3.2.2 Cut lengths:

3.2.2.1 Enveoples shall be made of a meterial free from oil vapors and other substances detrimental to welding operations. Envelope material used in packaging wire which is susceptible to corrosion shall have a water vapor transmission rate lower than 0.05 g per 100 sq in. (0.775 g/m^2) per 24 hr at 100°F (38°C) and 90% relative humidity. Envelopes shall be of sufficient strength to withstand normal handling; ends of wires may be capped to prevent puncturing the envelope. Envelopes may be purged with inert gas and this gas maintained as the atmosphere in the envelope; desiccants may also be added for further protection against oxidation and corrosion of the wire. Envelopes in which an inert gas atmosphere is used shall be heat sealed.

3.2.2.2 No package shall contain wire from more than one heat of alloy, except in the case of aluminum and magnesium alloys which are not restricted.

3.2.2.3 Not more than 40 lengths of wire shall be packaged in an envelope or in each compartment of a multiple-compartment envelope unless otherwise specified. The weight of wire in each envelope or each compartment shall be not greater than shown in Table III.

TABLE III

	Weight of Wire, lb per Envelope or Compartment For Wire Diameters, Inch, Shown				
Alloy Type	Up to 0.035, Incl	Over 0.035 to 0.050, Incl	Over 0.050 to 0.080, Incl	Over 0.080 to 0.100, Incl	Over 0.100
Aluminum, Magnesium, and Titanium	1.0	1.0	2.0	2.0	5.0
All Others	1.0	2.0	5.0	10.0	10.0

TABLE III (SI)

	Weight of Wire, kg per Envelope or Compartment For Wire Diameters, mm, Shown				
Alloy Type	Up to 0.90, Incl	Over 0.90 to 1.25, Incl	Over 1.25 to 2.00, Incl	Over 2.00 to 2.50, Incl	Over 2.50
Aluminum, Magnesium, and Titanium	0.5	0.5	1.0	1.0	2.5
All Others	0.5	1.0	2.5	5.0	5.0

3.3 Packing:

3.3.1 Containers of wire shall be packed so as to ensure that the wire, during shipment and storage, will be protected against mechanical injury, corrosion, dirt, grease, oil, and other contamination detrimental to welding.

3.3.2 Exterior containers of spooled wire shall contain the ordered multiple of standard spool net weights up to a maximum net weight of 120 lb (55 kg).

3.3.3 Exterior shipping containers of cut lengths shall contain approximately 5, 10, 50, or 100 lb (2.5, 5, 23, or 45 kg), as ordered.

3.3.4 ø Containers 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 wire to ensure carrier acceptance and safe delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

3.3.5 ø For direct U.S. Military procurement, packaging shall be in accordance with MIL-W-10430, Level A or Level C, as specified in the request for procurment. Commercial packaging as in 3.3.1 through 3.3.4 will be acceptable if it meets the requirements of Level C.

3.4 Identification: Interior containers of spools and cut lengths and all exterior shipping containers shall be marked as follows:

3.4.1 Interior Containers: Shall be permanently and legibly marked to show not less than the following information; for envelopes of cut lengths, the information may appear on an attached label or the label may be inserted in the envelope if the envelope is made of transparent material:

_____ WIRE, WELDING
WIRE SPECIFICATION NUMBER (and revision letter if any) _____
SIZE _____
QUANTITY _____
HEAT NUMBER (if applicable) _____
MANUFACTURER'S IDENTIFICATION _____
WIRE IDENTIFICATION SPECIFICATION (AMS 2815 or AMS 2816) _____
CODE NUMBER (from AMS 2815 or AMS 2816) _____

DO NOT HANDLE WIRE WITH BARE HANDS OR UNCLEAN GLOVES. OPEN CONTAINERS (ENVELOPES) SHALL NOT BE RETURNED TO STOCKROOM.

3.4.2 Exterior Shipping Containers: Shall be permanently and legibly marked to show not less than the following information:

_____ WIRE, WELDING
WIRE SPECIFICATION NUMBER (and revision letter if any) _____
SIZE _____
QUANTITY _____
HEAT NUMBER (If Applicable) _____
PURCHASE ORDER NUMBER _____
MANUFACTURER'S IDENTIFICATION _____
WIRE IDENTIFICATION SPECIFICATION (AMS 2815 or AMS 2816) _____
PACKAGED PER AMS 2814

4. QUALITY ASSURANCE PROVISIONS: Not applicable.

5. PREPARATION FOR DELIVERY: See Section 3.

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

7. REJECTIONS: Wire not packaged in accordance with this specification or with modifications authorized by purchaser will be subject to rejection.

8. NOTES:

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