



400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE

AMS 2814E

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Superseding AMS 2814D

Submitted for recognition as an American National Standard

PACKAGING AND MARKING OF PACKAGES 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 SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2816 Identification, Welding Wire, Color Code System

2.2 U.S. Government Publications:

Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

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 and shall be rendered free of dirt, grease, oil, corrosion, and other surface contamination which would interfere with welding.

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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 corrode 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 to provide sufficient strength and rigidity 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 Figure 1 and Table 1. The size of spool shall be selected on the basis of the alloy and quantity ordered. Each spool shall provide access to approximately 8 inches (203 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.
- 3.2.1.3 (R) Unless otherwise specified in the material specification, wire on each spool shall be one continuous length from the same heat of alloy, except in the case of aluminum and magnesium alloys which are not restricted.
- 3.2.1.4 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 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 2 for the alloy type ordered.

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TABLE 2A - Spool Net Weight, Inch/Pound Units

Alloy Base	Net Weight Pounds
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 2B - Spool Net Weight, SI Units

Alloy Base	Net Weight Kilograms
Aluminum	0.5, 4.5, 5.7, 6.8
Magnesium	0.3, 0.5, 4.1, 4.5
Titanium	0.5, 4.5, 9.1
Copper	11.3, 22.7
Steel, Corrosion-Resistant Alloys, and Refractory Alloys	0.7, 1.1, 11.3, 15.9, 22.7, 27.2

3.2.1.7 Spooled wire shall be packaged in hermetically sealed containers with a desiccant and/or a dry, inert atmosphere. 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 Envelopes shall be made of a material free from oil 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 grams per 100 square inches (0.775 g/m²) per 24 hours 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.

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3.2.2.2 Unless otherwise specified in the material specification, no package (R) 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 3.

TABLE 3A - Weight of Wire, Pounds per Envelope or Compartment, Inch/Pound Units

Alloy Type	For Wire Diameters Inch Up to 0.035, incl	For Wire Diameters Inch Over 0.035 to 0.050, incl	For Wire Diameters Inch Over 0.050 to 0.080, incl	For Wire Diameters Inch Over 0.080 to 0.100, incl	For Wire Diameters Inch 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 3B - Weight of Wire, Kilograms per Envelope or Compartment, SI Units

Alloy Type	For Wire Diameter Millimeter Up to 0.89, incl	For Wire Diameter Millimeter Over 0.89 to 1.27 incl	For Wire Diameter Millimeter Over 1.27 to 2.03, incl	For Wire Diameter Millimeter Over 2.03 to 2.54, incl	For Wire Diameter Millimeter Over 2.54
Aluminum, Magnesium, and Titanium	0.45	0.45	0.91	0.91	2.3
All Others	0.45	0.91	2.3	4.5	4.5

3.3 Packaging:

3.3.1 Containers of wire shall be packaged 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.

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- 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 pounds (54.4 kg).
- 3.3.3 Exterior shipping containers of cut lengths shall contain approximately 5, 10, 50, or 100 pounds (2.3, 4.5, 22.7, or 45.3 kg), as ordered.
- 3.3.4 Containers shall be prepared for shipment in accordance with commercial (R) 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.
- 3.3.5 For direct U.S. Military procurement, packaging shall be in accordance with MIL-W-10430, Commercial Level, unless Level A is specified in the request for procurement.

3.4 Marking:

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 with 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 _____
 CODE NUMBER _____

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 with 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 _____
 PACKAGED PER AMS 2814 _____
 WIRE IDENTIFICATION SPECIFICATION(In accordance with AMS 2816) _____

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4. QUALITY ASSURANCE PROVISIONS:

Not applicable.

5. PREPARATION FOR DELIVERY:

See Section 3.

6. ACKNOWLEDGMENT:

Not applicable.

7. REJECTIONS:

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

8. NOTES:**8.1 Marginal Indicia:**

The (R) symbol is used to indicate technical changes from the previous issue of this specification.

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

8.3 Key Words:

Packaging welding wire, premium welding wire, marking packages

PREPARED UNDER THE JURISDICTION OF AMS COMMITTEE "B".