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Identification Welding Wire Line Code System

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1. SCOPE:

This specification covers procedures for marking bare wire for welding to provide positive identification of cut lengths, regardless of length, and of spools, and to ensure that the wire is clean and free from foreign materials and corrosion.

2. APPLICABLE DOCUMENTS:

None.

3. TECHNICAL REQUIREMENTS:

3.1 Marking Methods:

3.1.1 Cut Lengths: Shall be legibly marked in accordance with 3.1.1.1 unless purchaser permits or specifies a method from 3.1.1.2.

3.1.1.1 Code Marking: Each length of wire shall be marked with the appropriate code from 3.2, applied by electrochemical means using solutions and procedures which will not cause deposition of substances detrimental to welding operations or to weldments. The code shall consist of a series of digits represented by the corresponding number of lines transverse to the axis of the wire. Each digit shall be confined to a space not longer than 1 in. (25 mm). The first code shall begin 1/2 - 3 in. (12 - 75 mm) from one end of the wire. Codes shall be spaced uniformly along the wire at 9 in. (225 mm) intervals. The width of the starting line of each code shall be 1/8 in. (3 mm); subsequent lines shall be 1/32 in. (1 mm) wide. Trailing edges of transverse lines within a digit shall be spaced 0.15 in. (3.5 mm) apart. Trailing edges of the first lines of successive digits within a code shall be spaced 1.5 in. (38 mm) apart. The number 6 shall be the highest digit used. The lines should extend completely around the circumference of the wire (See Fig. 1).

3.1.1.1.1 When permitted by purchaser, spacing between codes may be reduced below 9 in. (225 mm) but, in such cases, width of each line, spacing between lines of a digit, and spacing between digits shall be reduced in proportion to the reduction in spacing between codes.

3.1.1.1.2 When permitted by purchaser, the code may be applied only once to each length of wire, starting 1/2 - 3 in. (12 - 75 mm) from one end of the wire and observing the width and spacing requirements of 3.1.1.1.

3.1.1.2 Alternate Marking Methods: If electrochemical marking as in 3.1.1.1 is not suitable or desired, wire shall be marked by one of the following methods or other method to satisfy specific requirements, as permitted or specified by purchaser.

- 3.1.1.2.1 Mechanical Marking: Each length of wire shall be marked with the appropriate code from 3.2, applied by indentations produced by a suitable mechanical marking device. Spacing of marks shall be as specified in 3.1.1.1 and 3.1.1.1.1. Indentations shall be not greater in depth than 20% of the wire diameter and the radius at the base of each indentation shall be not less than 0.005 in. (0.12 mm). There shall be no sharp corners at edges of indentations. The width of the starting mark of each code shall be approximately 4 times that of other marks. Marks need not extend around the circumference of the wire (See Fig. 2) if clearly legible.
- 3.1.1.2.2 Specification Number Marking: Each length of wire 1/8 in. (3 mm) and over in diameter shall be marked, by electrochemical means or by indentation, at 9 in. (225 mm) intervals with the specification number including type, class, or grade designation and the prefix indicating the source of the specification (AMS, AWS, MIL, etc.).
- 3.1.1.2.3 Tab Marking: Each length of wire shall have applied within 1/2 in. (12 mm) of one end a plastic coated, pressure-sensitive adhesive label bearing the specification number, including type, class or grade designation, or both, and the prefix indicating the source of the specification (AMS, AWS, MIL, etc.). Imprints on the label shall be with fade-proof ink resistant to oils, solvents, and atmospheric conditions and to normal handling and shipping hazards.
- 3.1.1.2.4 Envelope Marking: Wire shall be unmarked. All identification shall appear on envelopes or unit containers.
- 3.1.2 Spooled Wire: Wire shall not be marked but the outer face of one or both flanges of each spool shall be permanently and legibly marked with not less than the following information; if only one flange of each spool is marked, the marking shall be on the flange of the spool which will face the operator when the spool is installed on a welding machine for use:

_____ WELDING WIRE
WIRE SPECIFICATION NUMBER _____
SIZE _____
QUANTITY _____
HEAT NUMBER (If applicable) _____
MANUFACTURER'S IDENTIFICATION _____
CODE NUMBER _____
DO NOT HANDLE WIRE WITH BARE HANDS OR UNCLEAN
GLOVES, OPEN CONTAINERS SHALL NOT BE RETURNED
TO THE STOCKROOM.

3.2 Coding:

3.2.1 The first digit of the marking code shall designate the alloy group, as follows:

1. Carbon and Low-Alloy Steels
2. Corrosion and Heat Resistant Steels and Alloys
3. Copper Alloys
4. Aluminum Alloys
5. Magnesium Alloys
6. Titanium, Refractory, and Reactive Alloys



3.2.2 Standard Codes: Shall be as follows:

Marking Code	AMS for Welding Wire	Nominal Composition
		<u>CARBON AND LOW ALLOY STEELS</u>
111	6460	0.75Si, 0.62Cr, 0.20Mo, 0.10Zr (0.10 - 0.17C)
112	6461	0.95Cr, 0.20V (0.28 - 0.33C), Vacuum Melted
1121	6462	0.95Cr, 0.20V (0.28 - 0.33C)
113	5030	0.06 max C
114		1.1Mn, 0.25Si (0.10 - 0.20C)
115		1.1Mn, 0.25Si, 0.30Cr (0.15 max C)
1151 Ø	6469	1.75Mn, 0.80Cr, 2.8Ni, 0.85Mo (0.09 - 0.12C), Vacuum Melted
116		0.95Cr, 0.2Mo (0.28 - 0.33C)
1161	6457	0.95Cr, 0.20Mo (0.28 - 0.33C), Vacuum Melted
1162	6452	0.95Cr, 0.20Mo (0.38-0.43C)
121		0.8Cr, 1.8Ni, 0.25Mo (0.38 - 0.43C)
1211	6459	1.0Cr, 1.0Mo, 0.12V (0.18 - 0.23C)
1212	6456	0.80Cr, 1.8Ni, 0.25Mo (0.35 - 0.40C)
122		0.5Cr, 0.55Ni, 0.2Mo (0.28 - 0.33C)
1221	5027	1.05Cr, 0.55Ni, 1.0Mo, 0.07V (0.26 - 0.32C)
1222	5028	1.05Cr, 0.55Ni, 1.0Mo, 0.07V (0.34 - 0.40C)
123		5Cr, 1.25Mo, 0.4V, 0.8Si (0.4C)
124	6466	5Cr, 0.55Mo (0.10 max C)
125		0.21 - 0.28C
126	6465	2.00Cr, 10Ni, 8.0Co, 1.0Mo, 0.02Al, 0.06V, Vacuum Melted