



AEROSPACE MATERIAL SPECIFICATION

AMS5776™

REV. H

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| Issued | 1957-01 |
| Reaffirmed | 2015-12 |
| Revised | 2021-10 |

Superseding AMS5776G

Steel, Corrosion and Heat-Resistant, Welding Wire
12.5Cr (SAE 51410)
(Composition similar to UNS S41001)

RATIONALE

AMS5776H is the result of a Five-Year Review and update of the specification. The revision prohibits unauthorized substitution (3.7, 4.4.1, 5.3.1, 8.5), updates composition testing (3.1), allows prior revisions (8.6), and adds country of origin to reports (4.4).

1. SCOPE

1.1 Form

This specification covers a corrosion and heat-resistant steel in the form of welding wire.

1.2 Application

This wire has been used typically as filler metal for gas-metal-arc or gas-tungsten-arc welding of steels of similar composition requiring joints with strength and corrosion resistance comparable to those of the basis metal, 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 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-000, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2248 Chemical Check Analysis Limits, Corrosion and Heat-Resistant Steels and Alloys, Maraging and Other Highly Alloyed Steels, and Iron Alloys

AMS2371 Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock

AMS2813 Packaging and Marking of Packages of Welding Wire, Standard Method

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<https://www.sae.org/standards/content/AMS5776H>

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| AMS2814 | Packaging and Marking of Packages of Welding Wire, Premium Quality |
| AMS2816 | Identification, Welding Wire, Tab Marking Method |
| AMS2819 | Identification, Welding Wire, Direct Color Code System |
| AMS5504 | Steel, Corrosion and Heat-Resistant, Sheet, Strip, and Plate, 12.5Cr (410), Annealed |
| ARP1876 | Weldability Test for Weld Filler Metal Wire |
| ARP1917 | Clarification of Terms Used in Aerospace Metals Specifications |
| ARP4926 | Alloy Verification and Chemical Composition, Inspection of Welding Wire |

2.2 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.

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|-----------|---|
| ASTM E18 | Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials |
| ASTM A751 | Chemical Analysis of Steel Products |
| ASTM E140 | Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness |

3. TECHNICAL REQUIREMENTS

3.1 Wire Composition

Shall conform to the percentages by weight shown in Table 1, determined by in accordance with ASTM A751 or by other analytical methods acceptable to purchaser.

Table 1 - Composition

| Element | Min | Max |
|---------------------|-------|-------|
| Carbon | 0.10 | 0.15 |
| Manganese | -- | 1.00 |
| Silicon | -- | 1.00 |
| Phosphorus | -- | 0.025 |
| Sulfur | -- | 0.015 |
| Phosphorus + Sulfur | -- | 0.030 |
| Chromium | 11.50 | 13.50 |
| Nickel | -- | 0.75 |
| Molybdenum | -- | 0.50 |
| Aluminum | -- | 0.05 |
| Copper | -- | 0.50 |
| Tin | -- | 0.05 |
| Nitrogen | -- | 0.08 |

3.1.1 Chemical analysis of initial ingot, bar, or rod stock before drawing is acceptable provided processes used for drawing or rolling, annealing, and cleaning are controlled to ensure continued conformance to composition requirements.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.