

OXIDIZED INCONEL

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 5687J

MS9226

Issued 7-1-48

Revised 7-1-89

Superseding AMS 5687H

ALLOY WIRE, CORROSION AND HEAT RESISTANT
74Ni - 15.5Cr - 8.0Fe
Annealed

UNS N06600

1. SCOPE:

- 1.1 Form: This specification covers a corrosion and heat resistant nickel alloy in the form of wire.
- 1.2 Application: Primarily for lock wire and wire cloth requiring oxidation resistance superior to that of the 18-8 type corrosion-resistant steel.

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 documents shall be as specified in AMS 2350.

- 2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

- AMS 2269 - Chemical Check Analysis Limits, Wrought Nickel Alloys and Cobalt Alloys
- AMS 2350 - Standards and Test Methods
- AMS 2371 - Quality Assurance Sampling of Corrosion and Heat Resistant Steels and Alloys, Wrought Products Except Forgings and Forging Stock

SAE Technical Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any particular infringement arising therefrom, is the sole responsibility of the user."

AMS documents are protected under United States and international copyright laws. Reproduction of these documents by any means is strictly prohibited without the written consent of the publisher.

2.2 ASTM Publications: Available from ASTM, 1916 Race Street, Philadelphia, PA 19103.

ASTM E8 - Tension Testing of Metallic Materials
ASTM E8M - Tension Testing of Metallic Materials (Metric)
ASTM E354 - Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-163 - Steel Mill Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E354, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

	min	max
Carbon	--	0.15
Manganese	--	1.00
Silicon	--	0.50
Phosphorus	--	0.040
Sulfur	--	0.015
Chromium	14.00 - 17.00	
Nickel + Cobalt	72.00	--
Iron	6.00 - 10.00	
Cobalt	--	1.00
Columbium + Tantalum	--	1.00
Titanium	--	0.50
Aluminum	--	0.35
Copper	--	0.50

3.1.1 Check Analysis: Composition variations shall meet the requirements of AMS 2269.

3.2 Condition: Cold-drawn from hot finished wire or rod, annealed, and descaled if necessary.

3.3 Properties: Wire shall conform to the following requirements:

3.3.1 Tensile Properties: Shall be as specified in Table I, determined in accordance with ASTM E8 or ASTM E8M.

TABLE I

Nominal Diameter Inches	Tensile Strength, psi, maximum	
	Coiled or Spooled	Straight Lengths
0.002 to 0.015, incl	130,000	--
Over 0.015 to 0.040, incl	115,000	--
Over 0.040	110,000	125,000

TABLE I (SI)

Nominal Diameter Millimetres	Tensile Strength, MPa, maximum	
	Coiled or Spooled	Straight Lengths
0.05 to 0.38, incl	896	--
Over 0.38 to 1.02, incl	793	--
Over 1.02	758	862

3.3.2 Wrapping: Wire shall withstand, without cracking, wrapping at room temperature five full, closely-spaced turns around a diameter equal to the nominal diameter of the wire.

3.4 Quality: Wire, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the wire.

3.5 Tolerances: Shall be as specified in Table II.

TABLE II

Nominal Diameter Inches	Tolerance, Inch plus and minus
0.002 to 0.0044, incl	0.0002
Over 0.0044 to 0.0079, incl	0.00025
Over 0.0079 to 0.0149, incl	0.0003
Over 0.0149 to 0.0199, incl	0.0004
Over 0.0199 to 0.031, incl	0.0005
Over 0.031 to 0.045, incl	0.0006
Over 0.045 to 0.079, incl	0.0007
Over 0.079 to 0.1875, incl	0.0010
Over 0.1875 to 0.406, incl	0.0015
Over 0.406	0.002

TABLE II (SI)

Nominal Diameter Millimetres	Tolerance, Millimetre plus and minus
0.05 to 0.112, incl	0.005
Over 0.112 to 0.201, incl	0.004
Over 0.201 to 0.378, incl	0.008
Over 0.378 to 0.505, incl	0.010
Over 0.505 to 0.79, incl	0.013
Over 0.79 to 1.14, incl	0.015
Over 1.14 to 2.01, incl	0.018
Over 2.01 to 4.762, incl	0.025
Over 4.762 to 10.31, incl	0.038
Over 10.31	0.05

4. QUALITY ASSURANCE PROVISIONS:

- 4.1 Responsibility for Inspection: The vendor of wire shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the wire conforms to the requirements of this specification.
- 4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each heat or lot as applicable.
- 4.3 Sampling: Shall be in accordance with AMS 2371. Sampling for wrapping test shall be as specified in AMS 2371 for bend testing.
- 4.4 Reports: The vendor of wire shall furnish with each shipment a report showing the results of tests for chemical composition of each heat and for tensile properties and wrapping of each lot. This report shall include the purchase order number, lot number, AMS 5687J, nominal size, and quantity.
- 4.5 Resampling and Retesting: Shall be in accordance with AMS 2371.

5. PREPARATION FOR DELIVERY:

- 5.1 Wire shall be supplied on spools or in coils except when straight lengths are ordered.
- 5.2 Identification:
- 5.2.1 Spools and Coils: Shall each be marked with a durable tag or label showing not less than the manufacturer's identification, purchase order number, AMS 5687J, nominal size, and quantity; boxes or drums shall be marked with the same information.

5.2.2 Straight Lengths: Shall have attached to each bundle or enclosed in each box a durable tag marked with the information of 5.2.1; when boxed, the box shall be marked with the same information.

5.3 Packaging:

5.3.1 Spools and Coils: Coils shall be individually wrapped with waterproof paper or packed in waterproof drums. Spools, when ordered, shall be boxed.

5.3.2 Straight Lengths: Shall be bundled or boxed.

5.3.3 Wire 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.

5.3.4 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-163, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.3.1 or 5.3.2 and 5.3.3 will be acceptable if it meets the requirements of Level C.

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 conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.

8. NOTES:

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

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

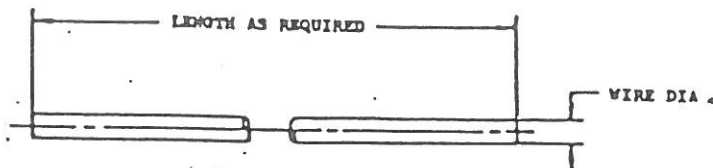
8.3 For direct U.S. Military procurement, purchase documents should specify not less than the following:

Title, number, and date of this specification
Nominal size of wire desired
Form (spools, coils, or straight lengths) of wire desired
Quantity of wire desired
Applicable level of packaging (See 5.3.4).

8.4 Similar Specifications: Federal QQ-W-390 is listed for information only and shall not be construed as an acceptable alternate unless all requirements of this AMS are met.

- 8.5 Wire meeting the requirements of this specification has been classified under Federal Supply Classification (FSC) 9525.
- 8.6 This specification is under the jurisdiction of AMS Committee "F".

MS9226(ASG)

FED. SUP CLASS
9525(BLACKENED INCONEL 600)
ANNEALED

PART NUMBER	(A)	WIRE DIAMETER	FT PER LB APPROX
MS9226-01		.016 ± .001	1422
MS9226-02		.020 ± .001	873
MS9226-03		.025 ± .001	558
MS9226-04		.032 ± .002	271
MS9226-05		.040 ± .002	218
MS9226-06		.051 ± .002	134
MS9226-07		.063 ± .002	88
MS9226-08		.091 ± .002	42

* PREFERRED SIZE

- (A) MATERIAL: CORROSION AND HEAT RESISTANT STEEL AMS 5687
HEAT IN AIR AT 1000°F FOR A TIME SUFFICIENT TO PRODUCE A GRAY COLOR
SPECIFICATION REQUIREMENTS SHALL BE MAINTAINED AFTER HEAT
WHEN LOCKWIRE IS SUPPLIED IN ACCORDANCE WITH THIS DRAWING, THE SPECIFIED DIAMETER
TOLERANCES SUPERSEDE THOSE IN THE MATERIAL SPECIFICATION.
(A) DIMENSIONS IN INCHES.
DO NOT USE UNASSIGNED PART NUMBERS.

THIS STANDARD WAS DEVELOPED COOPERATIVELY WITH THE ENGINE AND PROPELLER UTILITY PARTS COMMITTEE OF THE SAE.

CUSTOMER
Bovis & Vop
P.A. VAMP - 175C

MILITARY STANDARD

MILITARY SPECIFICATION
NONE

WIRE - STEEL, CORROSION AND HEAT RESISTANT, SAFETY, 1000°F

MS9226(ASG)

SHEET 1 OF 1

MS FORM 101-14 FEB 63

APPROVED 21 JAN 58 REVISED (A) 10 AUG 61

MS-11-11 3-0-61