

AEROSPACE
MATERIAL
SPECIFICATION

AMS 7848A
Superseding AMS 7848

Issued 1-31-64
Revised 10-1-84

TANTALUM ALLOY BARS AND RODS
90Ta - 10W

UNS R05255

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of 10-25-83. It is recommended that this specification not be specified for new designs.

This cover sheet should be attached to the "A" revision of the subject specification.

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AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AMS7848A

Superseding AMS 7848

Issued 1-31-64

Revised 6-15-75

TANTALUM ALLOY BARS AND RODS 90Ta - 10W

1. SCOPE:

1.1 Form: This specification covers a tantalum alloy in the form of bars and rods.

1.2 Application: Primarily for parts and assemblies requiring exposure to ultra-high temperatures. Applications in oxidizing atmospheres necessitate a protective coating.

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, Pennsylvania 15096.

2.1.1 Aerospace Material Specifications:

- AMS 2261 - Tolerances, Nickel, Nickel-Base, and Cobalt-Base Alloy Bars and Forging Stock
- AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

- ASTM E8 - Tension Testing of Metallic Materials
- ASTM E92 - Vickers Hardness of Metallic Materials

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight. Metallic elements shall be determined spectrographically, carbon shall be determined conductometrically, oxygen shall be determined by the inert gas or vacuum fusion method, nitrogen shall be determined by the Kjeldahl Method or by vacuum fusion, and hydrogen shall be determined by the vacuum fusion or vacuum extraction method.

	min	max
Tungsten	8.50	11.00
Columbium	--	0.10
Molybdenum	--	0.030
Nickel	--	0.010
Iron	--	0.010
Oxygen	--	0.010 (100 ppm)
Carbon	--	0.005
Nitrogen	--	0.005 (50 ppm)
Hydrogen	--	0.001 (10 ppm)
Tantalum	remainder	

3.2 Condition: Fully annealed.

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3.3 Properties: The product shall conform to the following requirements:

3.3.1 Tensile Properties: Shall be as specified in Table I, determined in accordance with ASTM E8 with the rate of strain maintained at 0.003 - 0.007 in. per in. per min. (0.003 - 0.007 mm/mm) through the yield strength and then increased so as to produce failure in approximately one additional minute. When a dispute occurs between purchaser and vendor over the yield strength values, a referee test shall be performed on a machine having a strain rate pacer, using a rate of 0.005 in. per in. per min. (0.005 mm/mm) through the yield strength and a minimum crosshead speed of 0.10 in. per min. (2.5 mm/min.) above the yield strength.

TABLE I

Nominal Diameter or Distance Between Parallel Sides Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset, psi, min	Elongation in 2 in. or 4D %, min
Up to 2.000, excl	75,000	65,000	15
2.000 to 3.500, incl	70,000	60,000	15

TABLE I (SI)

Nominal Diameter or Distance Between Parallel Sides Millimetres	Tensile Strength MPa, min	Yield Strength at 0.2% Offset, MPa, min	Elongation in 50.8 mm or 4D %, min
Up to 50.80, excl	517	448	15
50.80 to 88.90, incl	483	414	15

3.3.2 Hardness: Should be not higher than 235 HV30 or equivalent, determined in accordance with ASTM E92, but the product shall not be rejected on the basis of hardness if the tensile property requirements are met.

3.4 Quality: The product shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.

3.5 Tolerances: Unless otherwise specified, tolerances shall conform to all applicable requirements of AMS 2261.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples 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 perform such confirmatory testing as he deems necessary to assure that the product 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 or routine control tests.

4.3 Sampling: Shall be in accordance with the following; a lot shall be all product of the same nominal size from the same heat processed at the same time:

4.3.1 Composition: One sample from each heat except that for carbon, oxygen, nitrogen, and hydrogen determinations one sample from each lot.