SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

AMS 7848C

Issued 1964-01
Revised 2006-06
Reaffirmed 2010-05
Superseding AMS 7848B

Tantalum Alloy, Bars and Rods
90Ta - 10W

(Composition similar to UNS R05255)

RATIONALE

AMS 7848C is a Five Year Review and update of this specification.

1. SCOPE

1.1 Form

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

1.2 Application

Primarily for parts requiring exposure to ultra-high temperatures. Applications in oxidizing atmospheres necessitate a protective coating.

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 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), or www.sae.org.

AMS 2261	Tolerances, Nickel, Nickel Alloy, and Cobalt Alloy Bars, Rods, and Wire
AMS 2809	Identification, Titanium and Titanium Alloy Wrought Products

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, or www.astm.org.

ASTM E 8	Tension Testing of Metallic Materials
ASTM E 92	Vickers Hardness of Metallic Materials

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
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SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS7848C

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the following percentages by weight shown in Table 1; metallic elements shall be determined spectrochemically, 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:

TABLE 1 - COMPOSITION

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

3.2 Condition

Fully annealed.

3.3 Properties

The product shall conform to the following requirements:

3.3.1 Tensile Properties

Shall be as specified in Table 2, determined in accordance with ASTM E 8 with the rate of strain maintained at 0.003 to 0.007 inch/inch/minute (0.003 to 0.007 mm/mm/minute) 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 inch/inch/minute (0.005 mm/mm/minute) through the yield strength and a minimum crosshead speed of 0.10 inch (2.5 mm) per minute above the yield strength.

TABLE 2A – INCH/POUND UNITS

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

TABLE 2B – SI UNITS

Nominal Diameter or Distance Between Parallel Sides Millimeters	Tensile Strength MPa, min	Yield Strength at 0.2% Offset MPa, minimum	Elongation in 50.8 mm or 4D %, minimum
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 E 92, but the product shall not be rejected on the basis of hardness if the tensile property requirements are met.

3.4 Quality

The product, as received by purchaser, shall be uniform in quality, condition sound, and free from the foreign materials and from imperfections detrimental to usage of the product.

3.5 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 for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to specified requirements.

4.2 Classification of Tests

Tests for all technical requirements are acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling and Testing

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.

4.3.2 Tensile Property and Hardness Requirements

One sample from each lot.

4.4 Reports

The vendor of the product shall furnish with each shipment a report showing the results of tests for composition of each heat, the results of tests on each lot to determine conformance to the carbon, oxygen, nitrogen, and hydrogen requirements and for tensile property and hardness requirements, and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, lot number, AMS 7848C, size, and quantity.

4.5 Resampling and Retesting

If any specimen used in the above tests fails to meet the specified requirements, disposition of the product may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the product represented and no additional testing shall be permitted. Results of all tests shall be reported.