



AEROSPACE MATERIAL SPECIFICATION

AMS7852™**REV. D**

Issued 1980-04
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Stabilized 2026-05

Superseding AMS7852C

Columbium (Niobium) Alloy Sheet, Strip, and Plate,
10Hf - 1.0Ti
(Composition Similar to UNS R04295)

RATIONALE

AMS7852D has been declared "STABILIZED" by AMS Committee G Titanium and Refractory Metals. This document will no longer be updated and may no longer represent standard industry practice. This document contains mature technology that is not expected to change and thus no further revisions are anticipated. The committee can find no producers for this material.

NOTE: Previously, this document was reaffirmed. The last technical update of this document occurred in May 2013. Users of this document should refer to the cognizant engineering organization for disposition of any issues with reports/certifications to the specification, including exceptions listed on the certification. In many cases, the purchaser may represent a sub-tier supplier and not the cognizant engineering organization.

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1. SCOPE

1.1 Form

This specification covers a columbium (niobium) alloy in the form of sheet, strip, and plate.

1.2 Application

This material has been used typically for parts requiring exposure at ultra-high temperatures, but usage is not limited to such applications. 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), www.sae.org.

AMS2242	Tolerances, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Sheet, Strip, and Plate
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AMS2809	Identification, Titanium and Titanium Alloy Wrought Products
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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.

ASTM E 3	Preparation of Metallographic Specimens
ASTM E 8 / E 8M	Tension Testing of Metallic Materials
ASTM E 112	Determining Average Grain Size
ASTM E 290	Bend Testing Material for Ductility
ASTM E 384	Knoop and Vickers Hardness of Materials
ASTM E 2626	Spectrometric Analysis of Reactive and Refractory Metals

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1. Metallic elements shall be determined by spectrochemical methods in accordance with ASTM E 2626 or by other analytical methods acceptable to purchaser, carbon shall be determined by the combustion method using an infrared detection system; oxygen, nitrogen and hydrogen shall be determined by the inert gas fusion technique and columbium shall be determined by difference.

TABLE 1 – COMPOSITION

Element	min	max	Check Analysis (3.1.2) Under min or over max
Hafnium	9.00	11.00	0.15
Titanium	0.70	1.30	0.07
Zirconium	--	0.70	0.05
Tungsten	--	0.50	0.03
Tantalum	--	0.50	0.05
Carbon	--	0.015	None
Oxygen	--	0.0225 (225 ppm)	None
Nitrogen	--	0.015 (150 ppm)	None
Hydrogen	--	0.0015 (15 ppm)	None
Other Elements, total (3.1.1)	--	0.30	None
Columbium (Niobium)	remainder		

3.1.1 Determination not required for routine acceptance.

3.1.2 Check analysis limits are applicable only to purchaser verification testing; producer's test results shall conform to min and max limits of Table 1.

3.2 Melting Practice

Alloy shall be multiple vacuum melted using electron beam or consumable electrode practice.

3.3 Condition

Cold rolled or hot-cold rolled, descaled, and recrystallized.