



AEROSPACE MATERIAL SPECIFICATION

AMS7850™**REV. E**

Issued 1960-06
Revised 2013-10
Reaffirmed 2017-04

Superseding AMS7850D

Columbium (Niobium) Sheet, Strip, and Foil
(Composition similar to UNS R04211)

RATIONALE

AMS7850E has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE

1.1 Form

This specification covers columbium in the form of sheet, strip, plate, and foil.

1.2 Application

This material has been used typically for parts requiring exposure to ultra-high temperatures, but usage is not limited to such applications. Applications in oxidizing atmospheres necessitate a protective coating. Although produced in the cold rolled condition, this material is intended to be used in the annealed condition.

1.3 This alloy is frequently, and equivalently, called Niobium.

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

AMS2809 Identification, Titanium and Titanium Alloy Wrought Products

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Documents
Document Sharing Hub

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19248-2959, Tel: 610-832-9585, www.astm.org.

ASTM E 8 / E 8M Tension Testing of Metallic Materials

ASTM E 290 Bend Testing of Material for Ductility

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; nitrogen may also be determined by the Kjeldahl technique.

TABLE 1 - COMPOSITION

Element	min	max
Tantalum	--	0.10
Oxygen	--	0.030 (300 ppm)
Zirconium	--	0.010 (100 ppm)
Iron	--	0.010 (100 ppm)
Nitrogen	--	0.010 (100 ppm)
Carbon	--	0.005 (50 ppm)
Silicon	--	0.005 (50 ppm)
Titanium	--	0.005 (50 ppm)
Hydrogen	--	0.002 (20 ppm)
Other Elements, each (3.1.1)	--	0.010
Other Elements, total (3.1.1)	--	0.15
Columbium (Niobium)	remainder	

3.1.1 Determination not required for routine acceptance.

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Sheet, Strip, and Foil

Cold rolled.

3.2.2 Plate

Cold rolled or hot-cold rolled, and descaled.

3.3 Properties

The product shall conform to the following requirements:

3.3.1 As Received

Shall be as agreed upon by purchaser and vendor.