



BSI Standards Publication

AEROSPACE SERIES

**Specification for plate of
titanium-aluminium-vanadium
alloy (Tensile strength
895–1 150 MPa) (Maximum
thickness 100 mm)**

Publishing and copyright information

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Contents

Foreword *ii*

1 Scope 1

2 Normative references 1

3 Technical requirements 1

Bibliography 4

List of tables

Table 1 – Technical requirements for titanium-aluminium-vanadium alloy plate 2

Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 4, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI and came into effect on 30 November 2009. It was prepared by Panel ACE/61/-/49, *Titanium and its alloys*, under the authority of Technical Committee ACE/61, *Metallic materials for aerospace purposes*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS TA 56:1974, which is withdrawn.

Information about this document

This is a full revision of BS TA 56, and introduces the following principal changes:

- a) requirements stated in tabular format in accordance with EN 4500-1 and EN 4500-4;
- b) chemical composition amended to add requirements for “other” elements;
- c) melting method details deleted and replaced by reference to Section 1 of BS TA 100.

Hazard warnings

WARNING. This British Standard calls for the use of substances and/or procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Use of this document

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This standard specifies requirements for titanium-aluminium-vanadium alloy plate with a tensile strength of 895 to 1 150 MPa.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS TA 100, *Procedure for inspection, testing and acceptance of wrought titanium and titanium alloys*

3 Technical requirements

Material to this standard shall conform to Table 1.

NOTE The format and symbols used in Table 1 are derived from EN 4500-1 and EN 4500-4.

Table 1 Technical requirements for titanium-aluminium-vanadium alloy plate

1	Material designation		BS TA 56											
2	Chemical composition %	Element	Al	V	Fe	C	O ₂	N ₂	H ₂	Y	Others		Ti	
		Min.	5.50	3.50	—	—	—	—	—	—	—	—	—	Base
		Max.	6.75	4.50	0.30	0.08	0.20	0.05	0.015	0.005	0.10	0.40		
3	Method of melting		See Section 1 of BS TA 100											
4.1	Form		Plate ¹⁾											
4.2	Method of production		Rolling											
4.3	Limit dimension(s)	mm	a ≤ 100											
5	Technical specification		Sections 1 and 6 of BS TA 100											

6.1	Delivery condition		Annealed + descaled and pickled, ground and pickled or machined.									
	Heat treatment		700 °C ≤ θ ≤ 900 °C / AC or FC ²⁾									
6.2	Delivery condition code		U									
7	Use condition		Delivery condition									
	Heat treatment		—									

Characteristics

8.1	Test sample(s)		See Section 6 of BS TA 100											
8.2	Test piece(s)		See Section 6 of BS TA 100											
8.3	Heat treatment		Use condition											
9	Dimensions concerned	mm	5 < a ≤ 10			10 < a ≤ 25			25 < a ≤ 100					
10	Thickness of cladding on each face	%	—			—			—					
11	Direction of test piece		L and LT			L and LT			L and LT		ST			
12	Temperature	θ	°C	Ambient			Ambient			Ambient				
13	T	Proof stress	R _{p0.2}	MPa	≥ 825			≥ 825			To be agreed between manufacturer and purchaser			
14		Strength	R _m	MPa	895 ≤ R _m ≤ 1 150			895 ≤ R _m ≤ 1 150						
15		Elongation	A	%	≥ 10			≥ 8						
16		Reduction of area	Z	%	—			≥ 25						
17	Hardness		—											
18	Shear strength	R _c	MPa	—										
19	Bending	κ	—	—										
20	Impact strength		—											
21	C	Temperature	θ	°C	—									
22		Time	h	—										
23		Stress	σ _a	MPa	—									
24		Elongation	a	%	—									
25		Rupture stress	σ _R	MPa	—									
26		Elongation at rupture	A	%	—									
27	Notes (see line 98)		1), 2)											

Bibliography

Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS TA 10, *Specification for sheet of titanium-aluminium-vanadium alloy (Tensile strength 960–1 270 MPa)*

BS TA 11, *Specification for bar and section for machining of titanium-aluminium-vanadium alloy (Tensile strength 900–1 160 MPa) (Limiting ruling section 150 mm)*

BS TA 12, *Specification for forging stock of titanium-aluminium-vanadium alloy (Tensile strength 900–1 160 MPa) (Limiting ruling section 150 mm)*

BS TA 13, *Specification for forgings of titanium-aluminium-vanadium alloy (Tensile strength 900–1 160 MPa) (Limiting ruling section 150 mm)*

BS TA 28, *Specification for forging stock and wire of titanium-aluminium-vanadium alloy (Tensile strength 1 100–1 300 MPa) (Limiting ruling section 20 mm)*

EN 4500-1, *Metallic materials – Rules for the drafting and presentation of material standards – Part 1: General rules*¹⁾

EN 4500-4, *Metallic materials – Rules for the drafting and presentation of material standards – Part 4: Specific rules for titanium and titanium alloys*¹⁾

¹⁾ Published as ASD-STAN Prestandard at the date of publication of this standard.

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