

BS 2TA 58:2009



# BSI British Standards

## AEROSPACE SERIES

### Specification for plate of titanium-copper alloy (Tensile strength 520–640 MPa) (Maximum thickness 10 mm)

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Committee reference ACE/61

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**Amendments issued since publication**

Date	Text affected
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### 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This British Standard supersedes BS TA 58:1974, which is withdrawn.

### Information about this document

This is a full revision of BS TA 58, 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.

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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-copper alloy plate with a tensile strength of 520 to 640 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-copper plate

1	Material designation		BS TA 58								
2	Chemical composition %	Element	Cu	Fe	O <sub>2</sub>	C	N <sub>2</sub>	H <sub>2</sub>	Others		Ti
		Min.	2.0	—	—	—	—	—	—	—	Base
		Max.	3.0	0.20	0.20	0.08	0.030	0.010	0.10	0.40	
3	Method of melting		See Section 1 of BS TA 100								
4.1	Form		Plate <sup>1)</sup>								
4.2	Method of production		Rolled								
4.3	Limit dimension(s)	mm	—								
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		$\theta = 790 \text{ }^\circ\text{C} \pm 10 \text{ }^\circ\text{C} / 15 \text{ min} \leq t \leq 30 \text{ min} / \text{AC}$								
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	—								
10	Thickness of cladding on each face	%	—								
11	Direction of test piece		LT								
12	Temperature	$\theta$	$^\circ\text{C}$	Ambient							
13	Proof stress	$R_{p0.2}$	MPa	$\geq 420$							
14	T	Strength	$R_m$	MPa	$520 \leq R_m \leq 640$						
15		Elongation	A	%	$\geq 20$						
16		Reduction of area	Z	%	—						
17	Hardness		—								
18	Shear strength	$R_c$	MPa	—							
19	Bending	$\kappa$	—	—							
20	Impact strength		—								
21	Temperature	$\theta$	$^\circ\text{C}$	—							
22	Time		h	—							
23	Stress	$\sigma_a$	MPa	—							
24	C	Elongation	a	%	—						
25		Rupture stress	$\sigma_R$	MPa	—						
26		Elongation at rupture	A	%	—						
27	Note (see line 98)		1)								

Table 1 Technical requirements for titanium-copper plate (*continued*)

44	External defects	—	See Section 6 of BS TA 100		
74	Surface contamination	—	See Section 6 of BS TA 100		
95	Marking	—	See Section 6 of BS TA 100		
96	Dimensional inspection	—	See Section 6 of BS TA 100		
98	Note	—	<sup>1)</sup> British Standards covering other forms of material of similar composition are:		
			Form	$R_m$ (MPa)	
				540–700	690–920
	Sheet	BS TA 21	BS TA 52		

## 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 21, *Specification for sheet and strip of titanium-copper alloy (Tensile strength 540–700 MPa)*

BS TA 52, *Specification for sheet and strip of titanium-copper alloy (Tensile strength 690–920 MPa)*

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

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

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





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