

Aerospace Material Specification
TITANIUM-COPPER ALLOY FORGING STOCK
(Limiting ruling section 50mm)
(65-88 hbar)

NOTE 1. This specification is one of a series issued by the Ministry of Technology, either to meet a limited requirement not covered by any existing British Standard for aerospace material or to serve as a basis for inspection of materials the properties and uses of which are not sufficiently developed to warrant submission to the British Standards Institution for standardisation.

NOTE 2. Other forms of material of this composition are covered by the following specifications:

- D.T.D. 5233: Titanium-Copper Alloy Sheets.*
- D.T.D. 5243: Titanium-Copper Alloy Bars for Machining.*
- D.T.D. 5263: Titanium-Copper Alloy Forgings.*

NOTE 3. Where metric units are specified, these are to be regarded as the standard. The conversions of metric units to British units are approximate, and more accurate conversions should be based on the tables in B.S. 350: "Conversion factors and tables".

1. Inspection and testing procedure

1.1 This specification shall be used in conjunction with Sections 1 and 3 of British Standard TA.100.

2. Manufacture

2.1 The material shall be made from ingots produced, by consumable electrode melting, from materials having a total carbon content of not more than 0.08 per cent.

3. Chemical composition

3.1 The chemical composition of the material shall be:

Element	Per cent	
	min.	max.
Copper	2.0	3.0
Iron	—	0.20
Hydrogen	—	0.010
Titanium	The remainder	

4. Condition

4.1 The material shall be supplied as forged, hot rolled or extruded, and may be stress relieved at the discretion of the manufacturer.

NOTE. Stress relieving is achieved by heating the material for not more than 3 hours at a temperature between 600°C and 700°C.

4.2 Unless otherwise stated on the order, the material shall be supplied in the centreless ground or machined condition.

5. Heat treatment

5.1 Test samples shall be heat treated as follows:

- (a) Heat uniformly at a temperature between 790°C and 820°C and hold for one hour per 25mm (inch) of section, with a minimum of 30 minutes.
- (b) Cool in still air, forced air blast, oil or water.
- (c) Heat uniformly at a temperature of 400 ± 5°C for 24 hours.
- (d) Cool in air.
- (e) Heat uniformly at a temperature of 475 ± 5°C for 8 hours.
- (f) Cool in air.

6. Mechanical properties

6.1 *Tensile test.* The mechanical properties obtained from test pieces selected and prepared in accordance with the relevant requirements of British Standard TA.100 shall be:

0.2 per cent proof stress		Tensile strength				Elongation	Reduction of area
min.		min.		max.		min.	min.
hbar	tonf/in ²	hbar	tonf/in ²	hbar	tonf/in ²	per cent	per cent
54	35	65	42	88	57	10	30

Approved for issue,

E. W. RUSSELL,

Director of Materials Research and Development/Aviation.

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