TA 51 : February 1973
(Superseding, in part, British Standard TA 37)
UDC 629.7:669.295.5'71'28'6'782–134

British Standard: Aerospace Series Specification for

Forgings of titanium-aluminium-molybdenum-tin-silicon alloy

(Tensile strength 1000-1200 N/mm^2)
(Limiting ruling section over 100 mm up to and including 150 mm)

NOTE. Other forms of material of similar composition are covered by British Standards as listed in Appendix A.

1. Inspection and testing procedure

This British Standard shall be used in conjunction with Sections 1 and 4 of British Standard TA 100.

2. Manufacture

The forgings shall be made from forging stock complying with the requirements of British Standard TA 50.

3. Chemical composition

The chemical composition of the forgings shall be:

Element	%	
	min.	max.
Aluminium	**3.0**	**5.0**
Molybdenum	**3.0**	**5.0**
Tin	**1.5**	**2.5**
Silicon	**0.3**	**0.7**
Iron	–	0.20
Hydrogen	–	0.015
Oxygen	–	0.25
Nitrogen	–	0.05
Titanium	–	**Remainder**

4. Condition

Unless otherwise stated on the drawing, order or Inspection Schedule, the forgings shall be supplied fully heat treated and subsequently descaled and pickled.

5. Heat treatment

The forgings and test samples shall be heat treated as follows:

(1) heat at a temperature of 900 ± 10 °C and hold for 1 h per 25 mm of section, with a minimum of 20 min;
(2) cool in air;
(3) heat at a temperature of 500 ± 5 °C and hold for 24 h;
(4) cool in air.

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YA
British Standards Institution · 2 Park Street · London W1A 2BS
Telephone 01-629 9000
Telex 266933

6. Mechanical properties

6.1 *Tensile test at room temperature.* Unless they are required by British Standard TA 100 to be agreed between the manufacturer and the purchaser, the mechanical properties obtained from test pieces selected, prepared and tested in accordance with the relevant requirements of British Standard TA 100 shall be:

0.2 % proof stress	Tensile strength		Elongation	Reduction of area
min.	min.	max.	min.	min.
N/mm^2	N/mm^2	N/mm^2	%	%
870	1000	1200	9	20

NOTE. 1 N/mm^2 = 1 MN/m^2 = 1 MPa = 0.1 hbar = 0.065 $tonf/in^2$. Information on SI units is given in BS 3763, 'The International System of units (SI)', and BS 350, 'Conversion factors and tables'.

Appendix A. British Standards covering other forms of material of similar composition

Tensile strength (N/mm^2)	min.	1100	1050	1050	1050	1000
	max.	1280	1220	1220	1200	1200
Limiting ruling section (mm)	Over		25			100
	Up to and including	25	100	100	100	150
Form		British Standard				
Bar and section for machining		TA 45	TA 46			TA 49
Forging stock				TA 47		TA 50
Forgings					TA 48	

This British Standard, having been approved by the Aerospace Industry Standards Committee, was published under the authority of the Executive Board on 2 February 1973.

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The following BSI references relate to the work on this standard:
Committee reference ACE/49 Draft for comment 71/33667

7302–2k–MP

BSI

Amendment Slip No. 1
published and effective from 31 December 1980
to British Standard TA 51 : 1973
(Aerospace Series)

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(Tensile strength 1000 - 1200 N/mm²)
(Limiting ruling section over 100 mm up to and including 150 mm)

Revised text

AMD 3432
December 1980

Clause 3. Chemical composition

In the table, in the column headed 'max.', against 'Nitrogen', delete '0.05' and substitute '0.03'; below the requirement relating to nitrogen insert the following:

'Oxygen + 2 x nitrogen	–	0.27'

8012–0–2.1k–B

ACE/49

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