D.T.D.5094A

Ministry of Defence
Defence Procurement Agency, ADRP2
Abbey Wood
Bristol
BS34 8JH

OBSOLESCENCE NOTICE

All DTD specifications were declared obsolescent from 1st April 1999. All DTD 900 series approvals also lapsed at that time. The standards will no longer be updated but will be retained as obsolescent documents to provide for the servicing of existing equipment.

Further Guidance

The aim in declaring the specifications obsolescent is to recognise that the documents are not being updated and thus should be used with care by both purchaser and supplier. For example, a specification could contain valid technical information but may also contain type approval clauses that contradict procurement policy and/or use materials that do not comply with environmental legislation. The obsolescent specification can still be used as a basis for a purchase provided that the supplier and purchaser agree suitable changes to the specification within the purchase order/contract.

For the DTD 900 system, each specification has provided an MoD approved material and process. For these items, the declaration of obsolescence will constitute the termination of both the extant MoD approval and the continuing MoD assessment that had underpinned those approvals. Again, the technical content of the document remains valid and can be used by both purchaser and supplier as a basis for a contract but an acceptable (to the parties) approval/assessment procedure would be required.

PROCUREMENT EXECUTIVE
MINISTRY OF DEFENCE

D.T.D. 5094A

(Superseding D.T.D. 5094)
June, 1971

Aerospace Material Specification

FORGING STOCK AND FORGINGS

OF ALUMINIUM-ZINC-MAGNESIUM-COPPER-MANGANESE ALLOY

(Heat treated at a ruling thickness of not more than 75 mm)

(Solution treated, step quenched and precipitation treated for low internal stress)

(Zn 5.7, Mg 2.5, Cu 0.5, Mn 0.5)

NOTE. This specification is one of *a series issued by the Procurement Executive, Ministry of Defence to meet a requirement not covered by an existing British Standard for aerospace material.*

---

1. INSPECTION AND TESTING PROCEDURE

This specification shall be used in conjunction with the relevant sections of British Standard L.100 as follows: -

Cast billets and slabs for hot working	Sections 1 and 2
Extruded bars and sections for forging	Sections 1 and 3
Hot-rolled plate for forging	Sections 1 and 13
Forgings	Sections 1 and 7

2. QUALITY OF MATERIAL

The material shall be made from aluminium and alloying constituents, with or without approved scrap, at the discretion of the manufacturer.

3. CHEMICAL COMPOSITION

The chemical composition of the material shall be:

Element	Per cent	
	min	max
Copper	**0.3**	**0.7**
Magnesium	**2.2**	**3.2**
Silicon	—	0.5
Iron	—	0.5
Manganese	**0.3**	**0.7**
*Nickel	—	0.1
Zinc	**5.2**	**6.2**
*Lead	—	0.05
*Tin	—	0.05
Titanium plus Zirconium	—	0.2
Chromium	—	0.05
Aluminium	**The remainder**	

*Subject to the discretion of the Inspecting Authority, determination of these elements need be made on a small proportion only of the samples analysed.

4. CONDITION

4.1 Forging stock. Cast billets and slabs for hot working and extruded bars and sections and hot-rolled plate for forging shall be supplied non-heat-treated.

4.2 Forgings. Unless otherwise agreed in accordance with British Standard L.100, Section 7, forgings shall be supplied in the as forged condition for machining before heat treatment in accordance with Clause 5.

5. HEAT TREATMENT

The forgings shall be heat treated at a maximum ruling thickness of 75 mm, as follows:

(1) Solution treat by heating at a temperature of 460±l0°C, quenching as rapidly as possible in molten salt at a temperature of 180±5°C for 10 to 15 minutes, and washing in water.

(2) Precipitation treat by heating at a temperature of 135±5° for not less than 30 hours.

6. MECHANICAL PROPERTIES

Tensile test. Unless they are required by British Standard L.100 to be fixed by agreement between the manufacturer and the purchaser, the mechanical properties obtained from test pieces selected and prepared in accordance with the relevant requirements of British Standard L.100 shall be not less than the following values:

0.2% proof stress	Tensile strength	Elongation on gauge length of 5.65 $\sqrt{S_0}$
N/mm^2	N/mm^2	%
430	480	7

NOTE. 1 N/mm^2 = 0.102 kgf/mm^2 = 0.l hbar = 0.065 tonf/in^2. Information on SI units is given in BS 350, 'Conversion factors and tables', and in PD 5686, 'The use of SI units'.

APPENDIX

The following minimum properties may be expected from test pieces cut from forgings:

Ruling thickness at heat treatment	Direction of test	0.2% proof stress	Tensile strength	Elongation on gauge length of 5.65 $\sqrt{S_0}$
		N/mm^2	N/mm^2	%
Not over 25 mm	Longitudinal	380 *	460	7
	Transverse	370	445	3 **
Over 25 mm but not over 50 mm	Longitudinal	370	445	7
	Transverse	350	430	3 **
Over 50 mm but not over 75 mm	Longitudinal	355	430	7
	Transverse	325	415	3 **

* These 0.2% proof stress values are taken from autographic recordings of the load/extension diagram.

** These elongation values do not apply when test pieces are taken such that the gauge length is in close proximity to the flashline.

Approved for issue,

E. W. RUSSELL,

Director/Materials.

Printed in England by Willsons (Printers) Ltd., Leicester
and published by
HER MAJESTY'S STATIONERY OFFICE
Price 5p net

Dd.500031 K11 8/71 WPL455

SBN 11 470683 2