

**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.

Aerospace Material Specification
FORGING STOCK AND FORGINGS
OF ALUMINIUM-ZINC-MAGNESIUM-COPPER-MANGANESE ALLOY
(Solution treated, boiling water quenched and duplex precipitation
treated to improve stress corrosion resistance)
(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 as follows:

- (1) Solution treat by heating at a temperature of $460 \pm 10^\circ\text{C}$ and quenching in boiling water.
- (2) Precipitation treat in two stages as follows:

Stage I. Heat at a temperature of $135 \pm 5^\circ\text{C}$ for not less than 12 hours. Cool in air or raise temperature directly to the ageing temperature required by Stage II.

Stage II. Heat at a temperature of $150 \pm 5^\circ$ for 14 to 18 hours. Cool in air.

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:

Material represented	Test sample prepared by	Diameter or minor sectional dimension of forging stock		0.2% proof stress	Tensile strength	Elongation on gauge length of	
						50 mm	$5.65\sqrt{S_0}$
		mm		N/mm ²	N/mm ²	%	%
Extruded forging stock Forgings made from: Cast billets Hot-rolled plate Extruded stock	F	Over	Up to and including				
		All sizes		415	480	7	7
Extruded forging stock Forgings made from extruded stock	M	10	10	430		7	—
		75	75	450	520	7	7
		75	150	430	490	—	7

M = machining

F = forging

NOTE. 1 N/mm² = 0.102 kgf/mm² = 0.1 hbar = 0.065 tonf/in². 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 heat treated with a ruling section not greater than 75 mm:

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	%
Longitudinal	400	460	7
Transverse	380	440	3*

*This value may be reduced to 2% on $5.65\sqrt{S_0}$ in the short transverse direction in hand forgings and in die forgings where test pieces are taken adjacent and transverse to the flashline.

Approved for issue,

E. W. RUSSELL,

Director/Materials.

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