

Aerospace Material Specification
INGOTS AND CASTINGS OF
MAGNESIUM-ZINC-THORIUM-ZIRCONIUM ALLOY
(Precipitation treated)
(Zn 5.5, Th 1.8, Zr 0.7)

NOTE. This specification is one of a series issued by the Department of Trade and Industry for the Ministry of Aviation Supply, to meet a requirement not covered by an existing British Standard for aerospace material.

1. INSPECTION AND TESTING PROCEDURE

The ingots and castings shall be inspected and tested in accordance with the relevant requirements of British Standard L.101 as follows:

Ingots	Sections 1 and 2
Castings not subject to cut-up testing	Sections 1 and 3
Castings subject to cut-up testing	Sections 1 and 4

2. CHEMICAL COMPOSITION

2.1 Ingots. The chemical composition of the ingots shall be:

Element	Per cent	
	min.	max.
Zinc	5.3	6.0
Thorium	1.5	2.3
Zirconium	0.1	1.0
Rare earth metals	—	0.20
Manganese	—	0.15
Copper	—	0.03
Silicon	—	0.01
Iron	—	0.01
Nickel	—	0.005
Magnesium	The remainder	

2.2 Castings. The chemical composition of the castings shall be:

Element	Per cent	
	min.	max.
Zinc	5.0	6.0
Thorium	1.5	2.3
Zirconium	0.4	1.0
Rare earth metals	—	0.20
Manganese	—	0.15
Copper	—	0.03
Silicon	—	0.01
Iron	—	0.01
Nickel	—	0.005
Magnesium	The remainder	

3. HEAT TREATMENT

The castings and test samples shall be heat treated together as follows:

- (1) Heat at a temperature not exceeding 350°C for not less than 2 hours.
- (2) Cool in air or quench in oil or water, at the option of the manufacturer.

4. MECHANICAL PROPERTIES

NOTE. The tensile test values specified for test pieces machined from separately cast test samples may not be realized in certain portions of castings.

The mechanical properties obtained from separately cast test samples, selected and prepared in accordance with the relevant requirements of British Standard L.101, shall be not less than the following values:

Test sample	0.2% proof stress	Tensile strength	Elongation
	N/mm ²	N/mm ²	%
Sand cast	155	255	5
Chill cast	155	255	5

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'.

5. PROTECTION AGAINST CORROSION

The material shall be protected before despatch by one of the methods given in process specification D.T.D. 911. The method to be used shall be selected by the purchaser in accordance with the recommendations of AQD Technical Memorandum M.6 and shall be stated on the order.

Approved for issue,

E. W. RUSSELL,

Director of Materials (Aviation).

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and published by

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Price 5p net