

MINISTRY OF SUPPLY

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D.T.D. 165A

(Replacing Specification D.T.D. 165)

January, 1951.

Aircraft Material Specification

ALUMINIUM-5 PER CENT. MAGNESIUM ALLOY INGOTS AND CASTINGS

NOTE.—This specification is one of a series issued by the Ministry of Supply, either to meet a limited requirement not covered by any existing British Standard Specification 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.

Ingots — Sand castings — Die castings

1. Inspection and testing procedure.

Ingots	Sections One and Two of British Standard L.101.
Sand castings	Section One and Section Three or Four of British Standard L.101.
Die castings	Section One and Section Three or Four of British Standard L.101.

2. Quality of material.

2.1. Ingots.

- 2.1.1. The aluminium used shall comply with British Standard L.31 or L.48.
- 2.1.2. Approved scrap only may be used.

2.2. Castings. The castings shall be made from :—

- (a) approved ingots, with or without approved scrap therefrom, or
- (b) aluminium to British Standard L.31 or L.48 and alloying constituents.

3. Chemical composition.

3.1. The chemical composition of the ingots shall be :—

Copper	not more than 0.1 per cent.
Magnesium	not less than 3.0 nor more than 6.0 per cent.
Silicon	not more than 0.3 per cent.
Iron	not more than 0.6 per cent.
Manganese	not less than 0.3 nor more than 0.7 per cent.
Aluminium	the remainder.

3.2. The chemical composition of the castings shall be :—

Copper	not more than 0.1 per cent.
Magnesium	not less than 3.0 nor more than 6.0 per cent.
Silicon	not more than 0.3 per cent.
Iron	not more than 0.6 per cent.
Manganese	not less than 0.3 nor more than 0.7 per cent.
*Nickel	not more than 0.1 per cent.
*Zinc	not more than 0.1 per cent.
*Lead	not more than 0.05 per cent.
*Tin	not more than 0.05 per cent.
*Titanium plus niobium (columbium)	not more than 0.2 per cent.
Aluminium	the remainder.

* When the castings have been produced from approved ingots, with or without approved scrap therefrom, the proportions of casts in which this element is determined may be reduced, subject to the discretion of the Inspecting Authority, to not less than one in five of those analysed.

4. **Heat treatment.** None.

5. **Tensile test.**

	<i>Ultimate tensile stress</i> tons/sq. in. not less than	<i>Elongation</i> per cent. not less than
Sand cast test samples (Fig. 1)	9.0	3
Chill cast test samples (Fig. 2, 3 or 4)	11.0	5

NOTE.—The average 0.1 per cent. proof stress of test samples prepared in accordance with British Standard L.101 is approximately:—

Sand cast test samples 5 tons/sq. in.
Chill cast test samples 5 tons/sq. in.

These proof stress values are given for information only. It should be noted that they may not be realised in certain portions of the castings.

Approved for issue.

H. SUTTON,

Director of Materials Research and Development (Air).