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**2L. 84**, August, 1971  
(Superseding British Standard L.84)

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BRITISH STANDARD : AEROSPACE SERIES  
SPECIFICATION FOR  
BARS AND EXTRUDED SECTIONS  
OF ALUMINIUM-COPPER-SILICON-  
MAGNESIUM ALLOY  
(Solution treated and aged at room temperature)  
(Not exceeding 200 mm diameter or  
minor sectional dimension)  
(Cu 1.5, Si 1, Mg 0.8)

NOTE. Forging stock, bars, extruded sections and forgings of this composition in the solution treated and precipitation treated condition are covered by British Standard L.85.

**1. INSPECTION AND TESTING PROCEDURE**

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

Bars and extruded sections	Sections 1 and 5
Bars and extruded sections for highly stressed structures	Sections 1 and 6

**1.2** If material bought to this British Standard is required, after precipitation treatment by the purchaser, to comply with the requirements for mechanical properties specified in British Standard L.85, the order shall stipulate additional tests to verify that, after such treatment, the material will comply with those requirements.

**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.

Price 30p

**YA**

3. CHEMICAL COMPOSITION

The chemical composition of the material shall be:

Element	%	
	min.	max.
Copper	1.0	2.0
Magnesium	0.5	1.2
Silicon	0.8	1.3
Iron	—	0.7
Manganese	—	1.0
*Nickel	—	0.2
*Zinc	—	0.2
*Lead	—	0.05
*Tin	—	0.05
*Titanium plus Zirconium	—	0.20
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 Bars and extruded sections. Unless otherwise agreed and stated on the order in accordance with British Standard L.100, Section 5, bars for machining and extruded sections shall be supplied solution treated, straightened and subsequently precipitation treated, but not controlled stretched.

4.2 Bars and extruded sections for highly stressed structures. Unless otherwise agreed and stated on the order in accordance with British Standard L.100, Section 6, bars for machining and extruded sections for highly stressed structures shall be supplied solution treated, controlled stretched and subsequently precipitation treated.

5. HEAT TREATMENT

5.1 Except as permitted by 5.2, the material shall be heat treated as follows:

- (1) Solution treat by heating at a temperature of  $520 \pm 5$  °C and quenching in water.
- (2) Age at room temperature for not less than 4 days.

5.2 Subject to the agreement and conditions of the Inspecting Authority, the material, instead of being solution treated in accordance with 5.1 (1), shall be quenched in water immediately after leaving the extrusion die.

6. MECHANICAL PROPERTIES

6.1 Tensile test. 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
N/mm <sup>2</sup>	N/mm <sup>2</sup>	%
190	310	13

NOTE. 1 N/mm<sup>2</sup>=1 MN/m<sup>2</sup>=0.102 kgf/mm<sup>2</sup>=0.1 hbar=0.065 tonf/in<sup>2</sup>. Information on SI units is given in BS 3763, 'The International System of units (SI)', and in PD 5686, 'The use of SI units'. See also BS 350, 'Conversion factors and tables'.

6.2 Hardness test. The value of  $X$  shall be as shown in the following table:

Tensile strength of test piece	Value of $X$
N/mm <sup>2</sup>	%
310 to less than 325	5
325 to less than 340	7.5
340 to less than 355	10
355 and over	12.5

This British Standard, having been approved by the Aerospace Industry Standards Committee, was published under the authority of the Executive Board of the Institution on 31 August, 1971.

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The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

*British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.*

The following BSI references relate to the work on this standard:  
Committee reference ACE/24. Draft for comment 69/27775

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