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3 S. 70, January, 1964
(Replacing British Standard 2 S.70)

BRITISH STANDARDS INSTITUTION
BRITISH STANDARDS HOUSE, 2 PARK STREET, LONDON, W.1

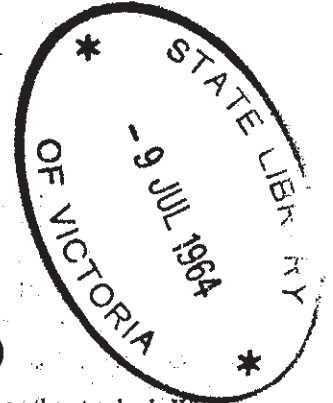
INCORPORATED BY ROYAL CHARTER
Telephone: MAYFAIR 9000
Telegrams: STANDARDS, AUDLEY, LONDON

**BRITISH STANDARD SPECIFICATION
FOR AIRCRAFT MATERIAL**

'55' CARBON STEEL

(Normalized)

(45/55 tonf/sq in: limiting ruling section 4 in)



NOTE 1. Where metric equivalents are stated the figures in British units are to be regarded as the standard. Where Fahrenheit equivalents are stated, the temperatures in degrees Celsius are to be regarded as the standard. The conversions are approximate. More accurate conversions should be based on the tables in B.S. 350, 'Conversion factors and tables'.

NOTE 2. In place of the customary, but incorrect use of the pound, ton or kilogramme as units of force, the units called pound-force (abbreviation lbf), ton-force (abbreviation tonf) or kilogramme-force (abbreviation kgf) have been used in this standard. These are the forces which, when acting on a body of mass one pound, one ton or one kilogramme respectively, give it an acceleration-equal to that of standard gravity.

1. Inspection and testing procedure.

1.1 This British Standard shall be used in conjunction with the relevant sections of British Standard 3 S.100 as follows:

Bars for machining delivered in other than the finally heat treated condition. (See Clause 5.1)

Sections One and Two.

Bars for machining delivered in the finally heat treated condition

Sections One and Three.

Billets and bars for forging

Sections One and Five.

Forgings

Sections One and Six.

Parts heat treated after machining

Sections One and Seven.

1.2 *Sulphur printing or deep etching tests.* Samples shall be selected in accordance with British Standard 3 S.100, Section One, Clause 7.2.2.

2. Process of manufacture.

The material shall be manufactured by the acid open hearth or an electric process, unless otherwise agreed between the manufacturer and the purchaser in accordance with British Standard 3 S.100, Section One, Clause 3.1.



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3 S. 70, January, 1964

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3. Chemical composition.

The steel shall contain:

Element	per cent	
	min.	max.
Carbon	0.50	0.60
Silicon	0.10	0.35
Manganese	0.6	0.9
Sulphur	—	0.045
Phosphorus	—	0.040

4. Surface dressing.

The material shall be locally dressed in accordance with the requirements of British Standard 3 S.100, Section One, Clause 5.2.

5. Condition.

5.1 The material shall be supplied in the appropriate condition stated below unless otherwise agreed between the manufacturer and the purchaser in which case the condition in which the material is to be supplied shall be stated on the order.

Designation	Material	Condition of supply
S.70B	Black bars for machining	Finally heat treated
S.70D	Bright bars for machining	Finally heat treated and cold drawn } before or or cold rolled } after final or machined } heat or ground } treatment
S.70A	Billets and bars for forging	As rolled or forged
S.70C	Forgings	Finally heat treated

5.2 Parts shall be supplied finally heat treated.

6. Final heat treatment.

The final heat treatment shall be:

Normalize at a temperature between 810°C and 840°C (1490°F and 1540°F).

3 S. 70, January, 1964
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7. Mechanical properties.

7.1 Tensile test. The mechanical properties obtained from test pieces selected and prepared in accordance with the relevant requirements of British Standard 3 S.100 shall be:

Tensile strength				Elongation per cent on gauge length	
tonf/sq in		kgf/mm ²		5.65√S ₀	4√S ₀
min.	max.	min.	max.	min.	min.
45	55	71	87	13	18

7.2 Hardness. The hardness of finally heat treated material and parts shall be not less than 201 HB nor more than 255 HB.

This British Standard, having been approved by the Aircraft Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council of the Institution on 31st January, 1964.

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 B.S.I. references relate to the work on this standard:
Committee reference ACE/15. Draft for comment D62/3645.

PD 6313

Amendment No. 1, published 31 January, 1968
to British Standard 3S.70 : 1964
'55' carbon steel
(normalized)
(45/55 tonf/sq in: limiting ruling section 4 in)

Revision

7.1 Tensile test. In the table, delete the column headed ' $4\sqrt{S_0}$ '.

7.2 Hardness. Delete the existing text and substitute the following:
'The hardness of finally heat treated material and parts shall be:

201 min. / 255 max. HB
or 210 min. / 270 max. HV'