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BRITISH STANDARD SPECIFICATION
FOR AIRCRAFT MATERIAL

80 TON, 2½ PER CENT
NICKEL-CHROMIUM-MOLYBDENUM STEEL
(HIGH CARBON)
(Limiting ruling section 6 in.)

- A. *Bars and billets for forging.*
- B. *Black and bright bars for machining.*
- C. *Forgings, other than those for crank and propeller shafts.*
- D. *Forgings for crank and propeller shafts.*
- G. *Heat-treated parts.*

1. **Chemical composition.***

Carbon	not less than 0.36 and not more than 0.44 per cent.
Silicon	not less than 0.10 and not more than 0.35 per cent.
Manganese	not less than 0.5 and not more than 0.7 per cent.
Nickel	not less than 2.3 and not more than 2.8 per cent.
Chromium	not less than 0.5 and not more than 0.8 per cent.
Molybdenum	not less than 0.4 and not more than 0.7 per cent.
Sulphur	not more than 0.045 per cent.
Phosphorus	not more than 0.045 per cent.

2. **Process of manufacture.**

Electric.

3. **Rough machining.**

Section One, Clause 5.2, of British Standard 2 S. 100.

*This composition is the same as En.26, B.S. 970, 'Wrought steels,' except for the sulphur and phosphorus limits.

4. Condition.

- 4.1. Bars and billets for forging shall be supplied in the softened condition.
- 4.2. Black bars for machining shall be supplied in the softened condition.
- 4.3. Bright bars for machining shall be supplied after having been softened and subsequently cold drawn, cold rolled, or ground.
- 4.4. Forgings shall be supplied in the softened condition.
- *4.5. Parts shall be made from bars or forgings complying with this specification and shall be supplied in the hardened and tempered condition.

5. Heat treatment.

- 5.1. The heat treatment to be given to the test samples and to machined parts shall be as follows :—

Harden in oil from a temperature between 820°C and 850°C.

Temper at a suitable temperature between 500°C and 600°C.

6. Mechanical properties.

- 0.1 per cent proof stress - not less than 70 tons/sq. in.
- Ultimate tensile stress - not less than 80 tons/sq. in.
and not more than 90 tons/sq. in.
- Elongation :—
- Up to 4 in. ruling section - not less than 14 per cent.
- Over 4 in. ruling section - not less than 12 per cent.
- Izod - not less than 25 ft lb.
- Brinell hardness number - not less than 363
and not more than 415.

7. Inspection and testing procedure

- Bars and billets for forging - Sections One and Two of
British Standard 2 S.100.
- Black and bright bars for machining - Section One and Two of
British Standard 2 S.100.
- Forgings other than those for
crank and propeller shafts - Sections One and Four of
British Standard 2 S.100.
- Forgings for crank and propeller
shafts - Sections One and Five of
British Standard 2 S.100.
- *Heat-treated parts - Section One and Sections
Four or Five of British
Standard 2 S.100.

*Attention is directed to the requirements of British Standard 2 S. 100 contained in the note at the beginning of Section Two and in Note (ii) at the beginning of Section Four.

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 10th October, 1955.

The Institution desires to call attention to the fact that this standard is intended to include the technical provisions necessary for the supply of the material herein referred to, but does not purport to comprise 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 CT (ACE) 8763.