

**Ministry of Defence
Defence Procurement Agency, ADRP2
Abbey Wood
Bristol
BS34 8JH**

OBSOLESCENCE NOTICE

All DTD specifications were declared obsolescent from 1st April 1999. All DTD 900 series approvals also lapsed at that time. The standards will no longer be updated but will be retained as obsolescent documents to provide for the servicing of existing equipment.

Further Guidance

The aim in declaring the specifications obsolescent is to recognise that the documents are not being updated and thus should be used with care by both purchaser and supplier. For example, a specification could contain valid technical information but may also contain type approval clauses that contradict procurement policy and/or use materials that do not comply with environmental legislation. The obsolescent specification can still be used as a basis for a purchase provided that the supplier and purchaser agree suitable changes to the specification within the purchase order/contract.

For the DTD 900 system, each specification has provided an MoD approved material and process. For these items, the declaration of obsolescence will constitute the termination of both the extant MoD approval and the continuing MoD assessment that had underpinned those approvals. Again, the technical content of the document remains valid and can be used by both purchaser and supplier as a basis for a contract but an acceptable (to the parties) approval/assessment procedure would be required.

Aerospace Material Specification

**1 PER CENT CHROMIUM-MOLYBDENUM STEEL
(115 hbar)**

**(Limiting ruling section 12.5mm)
(Suitable for welding by specialised processes)**

NOTE 1. This specification is one of a series issued by the Ministry of Technology to meet a limited requirement not covered by any existing British Standard for aerospace materials.

NOTE 2. Where metric units are stated these are to be regarded as the standard. The conversions of metric units to British units are approximate and more accurate conversions should be based on B.S. 350: "Conversion factors and tables".

NOTE 3. This steel is suitable for use where high strength and weldability are required, but the Design Authority should be consulted with regard to the method of welding and subsequent heat treatment.

NOTE 4. Filler rods that comply with D.T.D. 5152 are suitable for welding this steel by an appropriate process.

NOTE 5. The marginal lines indicate alterations from the previous issue of this specification.

1. Inspection and testing procedure

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

Bars for machining delivered in other than the finally heat treated condition . . . Sections One and Two.
 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 3S.100, Section One, Clause 7.2.1.

2. Process of manufacture

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

3. Chemical composition

3.1 The steel shall contain:

Element	Per cent	
	min.	max.
Carbon	0.30	0.35
Silicon	0.10	0.35
Manganese	0.40	0.60
Phosphorus	—	0.015
Sulphur	—	0.010
Chromium	0.80	1.10
Molybdenum	0.15	0.25
Nickel	—	0.30

4. Surface dressing

4.1 The steel shall be overall dressed in accordance with the requirements of British Standard 3S.100, Section One, Clause 5.1.

5. Condition

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

Form	Condition of supply
Bars for machining	Softened
Billets and bars for forging	Softened
Forgings	Softened

5.2 Parts shall be supplied finally heat treated.

5.3 Parts made from forgings or bars shall be finally heat treated after being machined to as near finished size as practicable.

6. Final heat treatment

6.1 Except as provided for in Clause 6.3, the final heat treatment shall be:

- (1) *Hardening*. Heat at a temperature between 860°C and 900°C and quench in oil.
- (2) *Tempering*. Heat at a temperature between 450°C and 530°C and cool in still air.

6.2 If bars for machining are delivered in the hardened and tempered condition and they have been subjected to a cold straightening or cold rolling operation, they shall be given a stress relieving treatment to restore the proof stress.

6.3 Alternatively to Clause 6.1, forgings and parts may be heat treated in accordance with the requirements of the drawing or order, subject to the provisions of British Standard 3S.100, Section Six, Clause 4.1, or Section Seven, Clause 3.1.

7. Mechanical properties

7.1 *Tensile test*. Except where they are required by British Standard 3S.100 to be agreed between the manufacturer and the purchaser, the tensile properties obtained from test pieces selected and prepared in accordance with the relevant requirements of British Standard 3S.100 shall be :

0.2 per cent proof stress		Tensile strength				Elongation on 5.65 $\sqrt{S_0}$
hbar	tonf / in ²	hbar		tonf / in ²		per cent
min.	min.	min.	max.	min.	max.	min.
99	64	115	130	75	85	5

7.2 *Hardness*.

7.2.1 The hardness of the softened steel shall be not more than 241 HB.

7.2.2 The hardness of the finally heat treated steel and parts shall be:

341 min./388 max. HB.

or

360 min./410 max. HV.

Approved for issue,

E. W. RUSSELL,

Director of Materials Research and Development/Aviation.

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Printed in England for Her Majesty's Stationery Office
by Willsons (Printers) Ltd., Leicester

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