D.T.D. 713

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.

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Aircraft Material Specification

2½ PER CENT. NICKEL-CHROMIUM-MOLYBDENUM STEEL TUBES (75 tons).

NOTES.— 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 Intstitution for standardisation.

This specification covers thick wall tubes, and is intended to cater for the supply of tubes for prototype undercarriage construction only.

1. **Chemical composition.***

Carbon	not less than 0.27 and not more than 0.35 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. **Inspection procedure.**

Section 1 of British Standard T.100 (except Clauses 6, 7 and 8).

4. **Margins of manufacture.**

Tubes shall comply with the limits specified below (see also Appendix) :—

Bore	Tolerance on Bore	Wall Thickness	Tolerance on Wall Thickness
in.		in.	
4	± ½ inch for all sizes	¾	+ 20% - 5 % for all sizes
4¼		¾	
4½		¾	
4¾		¾	
5		1	
5½		1	
6		1	
6½		1	
7		1	

5. **Heat treatment.**

5.1. Tubes shall be delivered in the softened condition.

5.2. The test samples, selected and prepared as specified in Clause 6, shall be hardened by heating uniformly at a temperature not more than 850°C. and quenching in oil or water or cooling freely in air. They shall then be tempered to give the mechanical properties specified in Clause 8.

5.3. No test sample shall be re-heat treated more than twice.

5.4. The heat-treatment temperatures and method of cooling employed and the section of the test samples at the time of heat treatment shall be stated on the test certificate.

5.5. A copy of the test certificate shall be supplied by the manufacturer to the purchaser, and this shall include the results of all the tests required by Clause 8.

6. **Selection and preparation of tensile and impact test samples.**

6.1. The inspector shall select one test sample from the largest tube in each cast for tensile and impact testing.

6.2. The test samples shall be heat treated in the size as cut from the tube. If it is necessary to remove the surface, they shall be heat treated as near that size as possible.

* This composition is the same as En.25, B.S.970, except for the sulphur and phosphorus limits.

7. **Tests on machined components.**

7.1. For machined components one test sample shall be provided from the largest tube, to represent each batch of finished parts made from the same cast and heat treated together.

7.2. The finished parts and the test pieces shall be heat treated in accordance with Clause 5.

7.3. An allowance for grinding may be left on the finished parts and test pieces if desired; if this allowance is left, they shall be finished by grinding after heat treatment.

7.4. No finished part shall be re-heat treated more than twice.

8. **Mechanical tests.**

Ultimate tensile stress	not less than 75 tons per sq. in.
Elongation	not less than 14 per cent.
Izod	not less than 25 ft. lb.

APPENDIX

For information

Nominal bore of hot-finished tubes	Nominal outside diameter of hot-finished tubes	Outside diameter to which tubes will clean up after machining	Bore to which tubes will clean up after machining	Stock lengths
in.	in.	in.	in.	ft.
4	5½	5¼	4¼	6 to 9
4¼	5¾	5½	4½	6 to 9
4½	6	5¾	4¾	6 to 9
4¾	6¼	6	5	6 to 9
5	7	6¾	5¼	8 to 10
5½	7½	7¼	5¾	8 to 11
6	8	7¾	6¼	8 to 11
6½	8½	8¼	6¾	10 to 14
7	9	8¾	7¼	10 to 14

Approved for issue.

H. SUTTON,

Director of Materials Research and Development (Air).

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