

**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.

Aircraft Material Specification

ALUMINIUM-BRONZE SAND OR DIE CASTINGS

NOTE.—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 Institution for standardisation

SECTION I .. Ingots

SECTION II .. Castings

SECTION I

Ingots

1. **Chemical Composition.**—(a) The chemical composition of the alloy shall be:—

Aluminium	..	..	..	..	..	not less than 8.0 nor more than 12.0 per cent.
Nickel	..	..	..	..	..	not less than 3.0 nor more than 6.0 per cent.
Iron	..	..	..	..	..	not less than 3.0 nor more than 6.0 per cent.
Lead	..	..	..	..	..	not more than 0.05 per cent.
Tin	..	..	..	..	..	not more than 0.20 per cent.
Zinc	..	..	..	..	..	not more than 0.50 per cent.
Silicon	..	..	..	..	..	not more than 0.25 per cent.
Magnesium	..	..	..	..	..	not more than 0.10 per cent.
Copper	..	..	..	..	..	the remainder.

The following element may be present at the option of the Manufacturer:—

Manganese	not more than 2.5 per cent.
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(b) The Manufacturer shall supply the complete analysis of every cast of ingots to the Inspector.

(c) A “cast” of ingots is defined as:—

- (i) the product of one furnace melt;
- (ii) the product of one crucible melt;
- (iii) the product of a number of crucible or furnace melts where such are aggregated and mixed prior to casting;
- (iv) the amount of metal tapped from the furnace without any further addition of metal having been made, where a continuous melting process is employed for the production of ingots;
- (v) or as otherwise defined from time to time.

2. **Provision and Preparation of Tensile Test Samples.**—(a) A sample from each cast of ingots shall be cast in a sand mould, and a test piece machined from this sample to the dimensions shown in Fig. 1 shall pass the tensile test specified in Clause 8.

(b) The tensile test may be waived on material to be used in the alloy Manufacturer’s own foundry.

3. **Re-Tests.**—If any test piece fails to pass the tensile test specified in Clause 8, the Inspector may reject the ingots represented by that test piece or, at the request of the Manufacturer, select for test two further test samples representing the same ingots. Should both the further test samples pass the test, the ingots represented shall be accepted, but should either fail the ingots represented may be rejected.

4. **Identification.**—All ingots passed by the Inspector shall be stamped with the mark of the Inspector and such other markings will ensure full identification of the material.

SECTION II

Castings

5. **Manufacture.**—(a) All castings shall be manufactured from approved ingots which have been inspected and passed as complying with Section I of this specification or from virgin metal and hardeners. The addition of properly identified scrap may be made to any cast, at the option of the Manufacturer.

(b) The chemical composition of the castings shall comply with that specified in Clause 1 (a).

(c) The Manufacturer shall supply the complete analysis of the castings to the Inspector as follows:—

- (i) When ingots that have been inspected and passed as complying with Section I of this specification have been used, with or without the addition of approved scrap, the analysis of not less than 5 per cent. of the casts of alloy shall be submitted to the Inspector.
- (ii) When castings are poured direct from a melt made of virgin metal and hardeners, with or without the addition of approved scrap, an analysis of each cast will be required.

6. **Freedom from Defects.**—(a) The castings shall be clean, sound and free from blow-holes. They shall be capable of being machined satisfactorily and of taking a good finish.

(b) No patching, plugging or welding will be allowed unless previous permission in writing has been obtained from the Inspector.

(c) Any casting may be rejected for faults of manufacture, defects or incorrectness of dimensions, whether discovered during inspection or subsequently during machining, although it has been passed previously as conforming to the chemical composition and mechanical test of this specification.

7. **Provision and Preparation Tensile Test Samples.**— (a) *General procedure applicable to all castings.*—

- (i) The metal for the test samples shall be taken directly from the same crucible or ladle of metal from which the casting or castings will be poured. The metal so taken shall not be subjected to any treatment other than cooling down to the appropriate pouring temperature.
- (ii) Wherever possible the test samples shall be cast integral with the castings. Where this is not possible the test samples shall be cast in moulds of similar materials and condition to those used for the castings they represent.
- (iii) The test samples shall be machined to the dimensions shown in Fig. 1. The test samples shall not be heat treated or mechanically worked before they are tested.

(b) *Castings made from approved ingots, with or without the addition of approved scrap.*— At least one tensile test sample shall be cast to represent each 600 lb. of metal poured, and be submitted to the tensile test specified in Clause 8, provided that not less than one tensile test sample shall be cast and tested to represent each day's production.

(c) *Castings poured direct from a melt of virgin metal and hardener, with or without the addition of approved scrap.*— At least one tensile test sample shall be cast to represent each cast of metal or 300 lb. of metal poured, whichever is the greater, and submitted to the tensile test specified in Clause 8, provided that not less than one tensile test sample shall be cast and tested to represent each day's production.

8. **Tensile Test.**— The test pieces prepared as specified in Clause 7 shall comply with the following requirements to the satisfaction of the Inspector:—

*Ultimate Tensile Stress not less than 40 tons per sq. in.

Elongation on 2 inches not less than 12 per cent.

The load shall be applied axially.

Should a tensile test piece break outside the middle half of its gauge length the test may be discarded and another test made.

9. **Re-Tests.**— If any test piece fails to pass the tensile test specified in Clause 8, the Inspector may reject the castings represented by that test piece or, at the request of the Manufacturer, select for test two further test samples to represent the same castings. At least one of the further test samples shall be from the same cast as that from which the original test sample was taken. Test pieces prepared from these two further test samples must pass the tensile test specified in Clause 8.

10. **Identification.**— All castings passed by the Inspector shall be stamped with the mark of the Inspector and such other marking as will ensure full identification of the material.

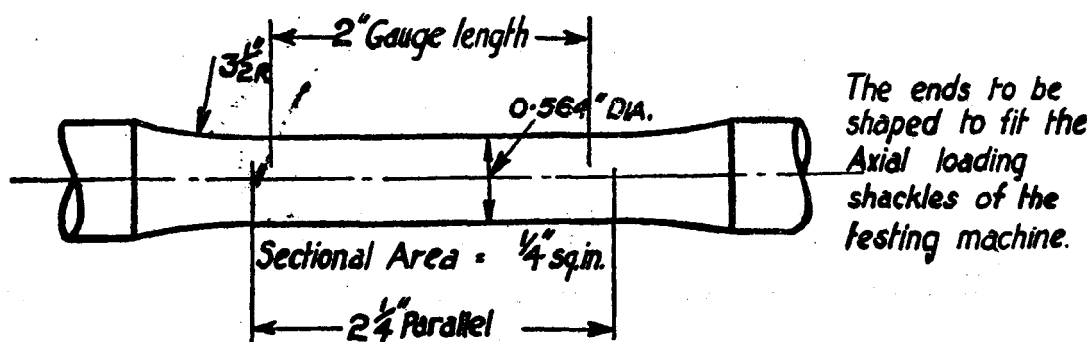


FIG. 1. TENSILE TEST PIECE

* The following particulars are given for information only:—

The 0.1 per cent proof stress of these test pieces may be expected to be not less than 16 tons per sq. in.

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