

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

## **OBSOLESCENCE NOTICE**

All DTD specifications were declared obsolescent from 1<sup>st</sup> 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-NICKEL-SILICON BRASS SHEETS**  
**(Annealed) (For sheets not over 24 inches wide)**

*NOTE.-This specification is one of a series issued by the Ministry of Aviation, either to meet a limited requirement not covered by any existing British Standard for aircraft material 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 standardization.*

**1. Chemical composition**

(a) The chemical composition of the sheets shall be :

Copper	..	..	..	not less than 81.0 nor more than 86.0 per cent.
Aluminium	..	..	..	not less than 0.7 nor more than 1.2 per cent.
Nickel	..	..	..	not less than 0.8 nor more than 1.4 per cent.
Silicon	..	..	..	not less than 0.8 nor more than 1.3 per cent.

*Impurities :-*

Iron	..	..	..	not more than 0.25 per cent.
Lead	..	..	..	not more than 0.05 per cent.
Tin	..	..	..	not more than 0.10 per cent.
Manganese	..	..	..	not more than 0.10 per cent.
Zinc	..	..	..	the remainder

(b) The manufacturer shall supply, when required, the complete analysis of the sheets to the inspector.

**2. Method of manufacture**

(a) The finish of the sheets shall be effected by cold rolling.

(b) The sheets shall be supplied in the annealed condition.

**3. Freedom from defects**

(a) The sheets shall be free from defects.

(b) Any sheet may be rejected for faults in manufacture, although it has been passed previously on chemical composition and mechanical tests.

**4. Margins of manufacture**

The margins of manufacture of the sheets shall not exceed those given in Tables I to III.

**5. Selection and preparation of mechanical test samples**

(a) Sheets of the same nominal thickness shall be grouped in parcels of not more than 3 cwt. One tensile test sample (from sheets 0.02 in. thick and over only) and one bend test sample shall be cut from one sheet selected by the inspector from each parcel for the tensile and single bend tests specified in Clauses 6 (a) and (b) (i).

(b) The tensile test sample shall be cut from the selected sheet in such a manner that the longitudinal axis of the test piece lies in a direction parallel to the direction of final rolling.

(c) All single bend test pieces shall be  $\frac{1}{2}$  in. wide and shall be cut from each selected sheet so that the longitudinal axis of the test piece is in a direction at right angles to the direction of final rolling. The longer edges of the test pieces shall be carefully smoothed and chamfered so that the cross section has approximately semi-circular ends.

(d) All test samples shall be marked as directed by the inspector before they are cut from the sheets, and shall not be heat treated or mechanically worked before being tested.

(e) Sheets from which test samples have been taken for the purposes of these tests shall be considered good delivery.

**6. Mechanical tests\***

The mechanical properties of the test pieces machined from the samples selected and prepared as specified in Clause 5 must comply with the following requirements to the satisfaction of the inspector:

(a) Tensile test† (for sheets 0.02 in. and thicker)—

Tensile strength .. .. . not less than 22 nor more than 30 tons per sq. in.

For sheets thicker than 12 S.W.G. (0.104 in.)—

Elongation on 2 in. .. .. . not less than 30 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.

\* The tensile and single bend tests shall be carried out in accordance with British Standard 485.

† The 0.1 per cent. proof stress of the material may be expected to be not less than 6.5 tons per sq. in. This value is quoted for information purposes only.

(b) Single bend test (applicable only to sheets 12 S.W.G. (0.104 in.) and thinner). (i) Each test piece must withstand without cracking being bent through 180° and closed down flat. The test pieces shall be bent in such a manner that the axis of the bend lies in a direction parallel to the direction of final rolling.

(ii) A corner bend test shall be made on up to 10 per cent of each parcel of sheets, and one corner of each of these sheets must withstand without cracking being bent through 180° and closed down flat. When lack of evidence of uniform quality is apparent, the corner bend test shall be carried out on every sheet in the parcel.

Sheets which fail at this corner bend test may be rejected individually. Sheets which withstand the test satisfactorily shall be considered good delivery, notwithstanding the bent corners.

## 7. Re-tests

If any test piece fails to pass the mechanical tests specified in Clause 6, the inspector shall reject the parcel represented by that test piece or, at the request of the manufacturer, select for test from the same parcel two other samples, one of which must be from the sheet from which the original test sample was taken unless that sheet has been withdrawn by the manufacturer. Test pieces prepared from these further samples, as specified in Clause 5, must comply with the mechanical tests specified in Clause 6.

## 8. Identification

All sheets 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.

TABLE I  
*Tolerances on width*

Width of sheet	Tolerance in inches
Up to and including 6 inches .. .. .	±0.025
Above 6 inches up to and including 12 inches .. .. .	±0.032
Above 12 inches up to and including 24 inches .. .. .	±0.0625

TABLE II  
*Tolerances on length*

Length of sheet, if ordered to be cut to exact length	Tolerance in inches
Up to and including 6 inches .. .. .	±0.050
Above 6 inches up to and including 4 feet .. .. .	±0.0625
Above 4 feet up to and including 8 feet .. .. .	±0.125
Above 8 feet .. .. .	±0.250

TABLE III  
*Tolerances on thickness*

Thickness of sheet in inches	Up to and including 6 inches wide	Above 6 inches up to and including 12 inches wide	Above 12 inches up to and including 24 inches wide
	Inches	Inches	Inches
Up to but not including 0.010 .. .. .	±0.005	±0.0010	±0.0015
0.010 up to but not including 0.024 .. .. .	±0.0010	±0.0015	±0.0020
0.024 up to but not including 0.040 .. .. .	±0.0015	±0.0020	±0.0025
0.040 up to but not including 0.080 .. .. .	±0.0020	±0.0025	±0.0030
0.080 up to but not including 0.128 .. .. .	±0.0020	±0.0030	±0.0035
0.128 and over .. .. .	±0.0025	±0.0035	±0.0040

When the thickness is specified by weight per unit of area, this shall be converted into decimals of an inch, the weight of the alloy being taken as 533 lb. per cubic foot. The tolerance shall be that which, in Table III, is relevant to the thickness thus calculated.

Approved for issue,

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