

**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-NICKEL-SILICON BRASS BARS

NOTES.-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 standardisation.

This material is to be used only where high strength and a measure of corrosion resistance are necessary.

1. Chemical composition

(a) The chemical composition of the material of the bars 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.
<i>Impurities :</i>										
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 analysis of not less than 5 per cent. of the casts of alloy shall be submitted to the inspector. The minimum of analyses required may be increased by the inspector if he is not satisfied with the conditions of manufacture.

2. Methods of manufacture

The bars shall be supplied in the rolled, forged, or rolled and drawn condition.

3. Freedom from defects

(a) The bars shall be free from harmful defects.

(b) Any bar 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 for all bars except forged bars shall comply with Tables 1 and 2. For forged bars the margins of manufacture shall be agreed between the purchaser and manufacturer.

5. Selection and preparation of mechanical test samples

(a) Bars of the same nominal diameter or width across flats manufactured in the same manner shall be grouped into parcels, and the size of each parcel shall be as follows:

Cross-sectional dimension of bar	Maximum size of parcel
Up to and including $\frac{1}{2}$ in. Over $\frac{1}{2}$ in. up to and including $2\frac{1}{2}$ in. Over $2\frac{1}{2}$ in.	3 cwt. 10 cwt. 40 cwt. or 100ft. of bar, whichever is the greater weight

(b) The inspector shall select one test from sample each parcel for the tensile test specified in Clause 6.

(c) The test samples shall be marked as directed by the inspector, and shall then be removed from the bars by nicking and breaking off, or they may be sawn, and after separation from the bar, fractured. The surfaces of the fractures must show freedom from piping or other defects.

(d) For bars up to and including $1\frac{1}{2}$ in. diameter or width across flats, the tensile test piece shall be machined concentrically from the test sample.

For bars over $1\frac{1}{2}$ in. diameter or width across flats, the longitudinal axis of the tensile test piece shall be not less than $\frac{9}{16}$ in. from the surface of the test sample.

(e) The test samples shall not be heat-treated or mechanically worked before being tested.

(f) *Tensile test.*-The tensile test pieces shall be turned to the dimensions of the British Standard test piece C (a suitable test piece is shown in Fig. 1), or if the samples are too small the test pieces shall be in accordance with the largest possible size of those shown in British Standard A.4 (latest issue).

Round, square, and hexagonal bars less than $\frac{9}{16}$ in. diameter or width across flats may be tested in the full section.

The parallel portion of any test piece may be increased in length to accommodate the extensometer employed.

6. Tensile test

(a) The mechanical properties of the tensile test pieces machined from the samples, selected and prepared as specified in Clause 5 must comply with the following requirements:

Diameter or width across flats	0.1 per cent proof stress Tons per sq. in.	Tensile strength Tons per sq. in.	Elongation per cent
Up to and including 1 in. ..	Not less than 18	Not less than 35	Not less than 20
Over 1 in.	Not less than 15	Not less than 30	Not less than 25

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.

(b) *Re-tests*.—If any test piece fails to pass the tensile test specified in para. (a) above, the inspector may reject the parcel represented by that test piece, or, at the request of the manufacturer, select for test from the same parcel two further samples; one of these must be from the same bar from which the original test sample was taken, unless that bar has been withdrawn by the manufacturer. Test pieces prepared from these two further samples as specified in Clause 5 must pass the tensile test specified in para. (a) above.

7. Identification

All bars 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.

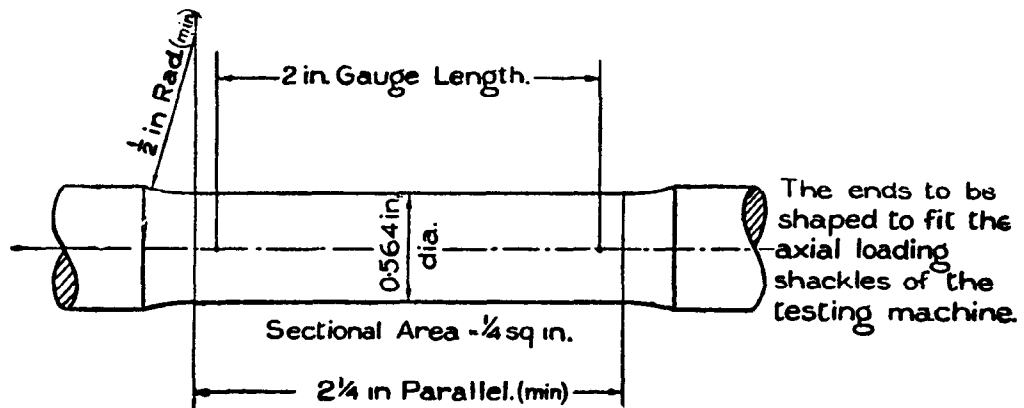


Fig. 1-Tensile Test Piece

TABLE I
Margins of Manufacture
Round and Square Bars

1 Nominal size of bar (Diameter or width across flats)	2	3
	Rolled Margin of manufacture minus .000	Drawn after rolling Margin of manufacture plus .000
	inch	inch
$\frac{1}{16}$ (0.125)	-	-0.0015
$\frac{3}{16}$ (0.1875)	-	-0.0015
$\frac{1}{4}$ (0.25)	+0.010	-0.002
$\frac{5}{16}$ (0.3125)	+0.010	-0.002
$\frac{3}{8}$ (0.375)	+0.010	-0.002
$\frac{7}{16}$ (0.4375)	+0.010	-0.002
$\frac{1}{2}$ (0.5)	+0.010	-0.002
$\frac{9}{16}$ (0.5625)	+0.010	-0.002
$\frac{5}{8}$ (0.625)	+0.010	-0.002
$\frac{3}{4}$ (0.75)	+0.010	-0.002
$\frac{7}{8}$ (0.875)	+0.010	-0.003
1 (1.125)	+0.015	-0.003
$1\frac{1}{8}$ (1.25)	+0.015	-0.003
$1\frac{1}{4}$ (1.375)	-0.015	-0.003
$1\frac{3}{8}$ (1.5)	+0.020	-0.003
$1\frac{1}{2}$ (1.5)	-0.020	-0.004
$1\frac{3}{4}$ (1.625)	+0.020	-0.004
$1\frac{7}{8}$ (1.75)	+0.020	-0.004
2 (1.875)	+0.025	-0.004
2	+0.025	-0.004
Over 2 and up to and including 3 ..	+ 1.5 per cent.	±0.5 per cent.
Over 3	+2.0 per cent.	±0.1 per cent

Note.—Bars intermediate between sizes given in Column 1 shall not be ordered.

TABLE 2
Hexagon Bars

Rolled bars			Drawn bars			Corresponding sizes of bright hexagon nuts and bolt-heads				
Width across flats		Margin of manufacture	Width across flats		Margin of manufacture	Nominal size			Width across flats	
Max.	Min.		Max.	Min.		B.S.W.	B.S.F.	B.A.	Max.	Min.
in.	in.	in.	in.	in.	in.	in.	in.	No.	in.	in.
0.117	0.114	0.003	0.117	0.115	0.002	—	—	10	0.117	0.115
0.152	0.149	0.003	0.152	0.150	0.002	—	—	8	0.152	0.150
0.193	0.189	0.004	0.193	0.191	0.002	—	—	6	0.193	0.190
0.248	0.244	0.004	0.248	0.246	0.002	—	—	4	0.248	0.245
0.282	0.278	0.004	0.282	0.280	0.002	—	—	3	0.282	0.279
0.324	0.320	0.004	0.324	0.322	0.002	—	—	2	0.324	0.321
0.365	0.361	0.004	0.365	0.363	0.002	—	$\frac{1}{8}$	1	0.365	0.362
0.413	0.409	0.004	0.413	0.411	0.002	—	—	0	0.413	0.410
0.445	0.441	0.004	0.445	0.443	0.002	—	$\frac{1}{4}$	—	0.445	0.440
0.525	0.521	0.004	0.525	0.523	0.002	$\frac{1}{4}$	$\frac{5}{16}$	—	0.525	0.520
0.565	0.561	0.004	0.565	0.563	0.002	—	$\frac{3}{8}$	—	0.565	0.560
0.600	0.596	0.004	0.600	0.597	0.003	$\frac{1}{2}$	$\frac{7}{8}$	—	0.600	0.595
0.655	0.651	0.004	0.655	0.652	0.003	—	$\frac{13}{16}$	—	0.655	0.650
0.710	0.706	0.004	0.710	0.707	0.003	$\frac{3}{4}$	$\frac{7}{8}$	—	0.710	0.705
0.765	0.760	0.005	0.765	0.762	0.003	—	$\frac{15}{16}$	—	0.765	0.760
0.820	0.815	0.005	0.820	0.817	0.003	$\frac{7}{8}$	$\frac{1}{2}$	—	0.820	0.815
0.920	0.915	0.005	0.920	0.917	0.003	$\frac{15}{16}$	$\frac{9}{16}$	—	0.920	0.915
1.010	1.005	0.005	1.010	1.006	0.004	$\frac{1}{2}$	$\frac{3}{4}$	—	1.010	1.002
1.100	1.095	0.005	1.100	1.096	0.004	$\frac{5}{8}$	$\frac{11}{16}$	—	1.100	1.092
1.200	1.195	0.005	1.200	1.196	0.004	$\frac{3}{4}$	$\frac{3}{4}$	—	1.200	1.192
1.300	1.295	0.005	1.300	1.296	0.004	$\frac{7}{8}$	$\frac{7}{8}$	—	1.300	1.292
1.390	1.384	0.006	1.390	1.386	0.004	—	$\frac{15}{16}$	—	1.390	1.382
1.480	1.474	0.006	1.480	1.476	0.004	$\frac{1}{2}$	1	—	1.480	1.468
1.670	1.664	0.066	1.670	1.666	0.004	1	$1\frac{1}{8}$	—	1.670	1.658
1.860	1.854	0.006	1.860	1.856	0.004	$1\frac{1}{8}$	$1\frac{1}{4}$	—	1.860	1.845
2.050	2.042	0.008	2.050	2.046	0.004	$1\frac{1}{4}$	$1\frac{3}{8}$	—	2.050	2.035
2.220	2.212	0.008	—	—	—	$1\frac{3}{8}$	$1\frac{1}{2}$	—	2.220	2.200
2.410	2.402	0.008	—	—	—	$1\frac{1}{2}$	$1\frac{5}{8}$	—	2.410	2.390
2.580	2.570	0.010	—	—	—	$1\frac{5}{8}$	$1\frac{3}{4}$	—	2.580	2.555
2.760	2.750	0.010	—	—	—	$1\frac{3}{4}$	2	—	2.760	2.735
3.150	3.140	0.010	—	—	—	2	—	—	3.150	3.125
Above 3.150		±1.0 per cent	—	—	—	—	—	—	—	—

Note.-Bars intermediate between the sizes given in the above table shall not be ordered.

Approved for issue,

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