

**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****NICKEL-CHROMIUM-IRON ALLOY SHEETS AND STRIPS****(Hot or cold rolled and softened)**

NOTE 1. 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.

NOTE 2. Marginal lines indicate alterations from the previous issue of this specification.

**1. Chemical composition**

1.1 The chemical composition of the material shall be:

Element	Per cent	
	min.	max.
Carbon .....	—	0.15
<b>Chromium</b> .....	14.0	17.0
<b>Iron</b> .....	6.0	10.0
Silicon .....	—	0.5
Copper .....	—	0.5
Manganese .....	—	1.0
<b>Nickel plus Cobalt</b>	72.0	—

1.2 The chromium used in the manufacture of the material shall not contain more than 0.05 per cent sulphur.

1.3 The manufacturer shall supply to the inspector the results of analysis for the specified elements of each cast of the material.

1.4 A cast is defined as:

- (a) the product of one furnace melt;
- (b) the product of one crucible melt;
- (c) the product of a number of crucible or furnace melts mixed prior to casting;
- (d) the amount of metal tapped from the furnace without any further addition of metal having been made (when a continuous process is employed) ; or
- (e) as may be otherwise defined by the Inspecting Authority in agreement with the supplier

**2. Condition**

Sheet and strip up to and including 0.104 inch thick (12 S.W.G.) shall normally be supplied in the cold rolled and softened condition; material thicker than 0.104 inch shall normally be supplied in the hot rolled and softened condition.

**3. Surface finish**

Unless otherwise stated on the order the material shall be bright annealed or descaled by any method approved by the Inspecting Authority, so that surface inspection may be performed effectively.

**4. Freedom from defects**

4.1 The material shall be free from harmful defects.

4.2 Any sheet or strip may be rejected for faults in manufacture although it may have been passed previously on chemical composition and mechanical tests.

**5. Dimensional tolerances**

5.1 *Thickness.* The tolerances on the nominal thickness of sheet and strip shall not exceed those given in Tables 1 and 2 unless otherwise agreed between the manufacturer and the purchaser.

5.2 *Width.* The tolerances on the nominal width of sheet and strip shall not exceed those given in Tables 3 and 4 unless otherwise agreed between the manufacturer and the purchaser.

5.3 *Lateral curvature.* Each sheet and coil shall be so free from lateral curvature that when laid out flat no part of its edge shall be distant from a 6 ft chord by more than ½ inch.

## 6. Selection and preparation of mechanical test samples

- 6.1 Sheets and strips of the same nominal thickness, from the same cast and softened together or consecutively shall be grouped in batches of not more than 20 cwt.
- 6.2 Unless otherwise agreed between the manufacturer and the purchaser, the inspector shall select one test sample from each batch for the tensile and single bend tests specified in Clause 7.
- 6.3 The test samples shall be marked as directed by the inspector before they are removed from the material, and shall not be heat treated or mechanically worked after having been separated from the material they represent.
- 6.4 If the width of the material permits, the test pieces shall be cut so that the longer axis is in a direction at right angles to the direction of final rolling; if not, the test pieces shall be cut with the longer axis parallel to the direction of final rolling.
- 6.5 Tensile and single bend test pieces shall be prepared and tested in accordance with the requirements of British Standard A.4.
- 6.6 Unless otherwise agreed between the manufacturer and the purchaser, material from which test samples have been taken for mechanical tests shall be considered good delivery.

## 7. Mechanical properties

- 7.1 The mechanical properties obtained from test pieces selected and prepared in accordance with Clause 6 shall be as follows:
- 7.2 *Tensile test.*  
 Tensile strength ..... not less than 36 tonf/sq in.  
 Elongation on 2 in ..... not less than 30 per cent.
- 7.3 *Single bend test.*  
 a. Material 0.125 inch thick and thinner:  
 Angle of bend..... 180°  
 Radius of former ..... half the nominal thickness of the sheet or strip.  
 b. Material over 0.125 inch thick :  
 Angle of bend..... 180°  
 ..... nominal thickness of the sheet or strip.

## 8. Re-tests

following procedures, as requested by the manufacturer:

- (a) Select for test from the same batch two further test samples, one of which shall be from the sheet or strip from which the original test sample was taken, unless that sheet or strip has been withdrawn satisfy the test requirements of Clause 7.
- (b) Allow the batch to be re-softened and re-tested in accordance with Clauses 6 and 7.

## 9. Identification

Each sheet and strip passed by the inspector shall be stamped with the mark of the inspector and such

## DIMENSIONAL TOLERANCES

### TABLE 1

#### Tolerances on thicknesses of strip

Nominal thickness of strip	Tolerance on thickness		
	¼ in up to and including 3 in wide	Over 3 in up to and including 6 in wide	Over 6 in up to and including 9½ in wide
in	± in	± in	± in
0.010 up to and including 0.018 . . . .	0.00075	0.001	0.001
Over 0.018 up to and including 0.028	0.001	0.001	0.001
Over 0.028 up to and including 0.040	0.00125	0.0015	0.0015
Over 0.040 up to and including 0.064	0.0015	0.00175	0.002
Over 0.064 up to and including 0.104	0.00175	0.002	0.0025
Over 0.104 up to and including 0.160	0.0025	0.0025	0.003
Over 0.160 up to and including 0.187	0.003	0.003	0.0035

NOTES: Over 0.100 inch up to and including 0.160 inch thickness, minimum width is  $\frac{3}{8}$  inch.  
Over 0.160 inch up to and including 0.187 inch thickness, minimum width is  $\frac{1}{2}$  inch.  
The tolerances on the thickness of material thinner than 0.010 inch and thicker than 0.187 inch shall be agreed between the manufacturer and the purchaser, and stated on the order.

### TABLE 2

#### Tolerances on thicknesses of sheets

Nominal thickness of sheet	Tolerance on thickness				
	Over 9½ in up to and including 12 in wide	Over 12 in up to and including 18 in wide	Over 18 in up to and including 24 in wide	Over 24 in up to and including 36 in wide	Over 36 in up to and including 48 in wide
in	± in	± in	± in	± in	± in
0.010 up to and including 0.018 . . . .	0.0015	0.0015	0.0015	0.002	0.002
Over 0.018 up to and including 0.028	0.002	0.002	0.0025	0.003	0.0035
Over 0.028 up to and including 0.040	0.0025	0.0025	0.0025	0.0035	0.004
Over 0.040 up to and including 0.064	0.0025	0.003	0.0035	0.004	0.0045
Over 0.064 up to and including 0.104	0.0035	0.0035	0.004	0.0045	0.005
Over 0.104 up to and including 0.160	0.004	0.004	0.005	0.006	0.007

NOTES: 0.010 inch up to and including 0.0116 inch thickness, maximum width is 30 inches.  
The tolerances on the thickness of material thinner than 0.010 inch and thicker than 0.160 inch shall be agreed between the manufacturer and the purchaser, and stated on the order.

### TABLE 3

#### Tolerances on widths of strip

Nominal thickness of strip	Tolerance on width		
	¼ in up to and including 3 in wide	Over 3 in up to and including 6 in wide	Over 6 in up to and including 9½ in wide
in	± in	± in	± in
0.010 up to and including 0.040 . . . .	0.005	0.007	0.007
Over 0.040 up to and including 0.187	0.010	0.015	0.020

**TABLE 4**  
**Tolerances on widths of sheet**

Nominal thickness of sheet	Tolerance on width			
	Over 9½ in including 12 in wide	up to and including 18 in wide	Over 18 in up to and 36 in wide	Over 36 in including 48 in wide
	± in	in	±	± in
Over 0.064 up to and including 0.104 Over 0.104 up to and including 0.160	$\pm \frac{1}{16}$ $\frac{1}{16}$	$\frac{1}{16}$ $\frac{1}{16}$	$\frac{1}{16}$ $\frac{1}{16}$	$\pm \frac{1}{16}$ $\frac{1}{16}$

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Approved for issue,

E. W. RUSSELL,

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