

**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.

**Aerospace Material Specification**

**CHROMIUM-NICKEL CORROSION-RESISTANT STEEL  
WIRE, RIVETS AND SPLIT PINS**

(The wire is suitable for locking wire)

*NOTE: This specification is one of a series issued by the Procurement Executive, Ministry of Defence to meet a requirement not covered by an existing British Standard for aerospace material.*

SECTION ONE — General requirements.

SECTION TWO — Wire.

SECTION THREE — Rivets and split pins.

**SECTION ONE—GENERAL REQUIREMENTS**

**1. Chemical composition**

1.1 The chemical composition of the steel shall be as follows:

	Percent	
	minimum	maximum
Carbon ... ..	—	0.15
Silicon ... ..	0.20	—
Manganese ... ..	—	2.0
Nickel ... ..	7.0	10.0
Chromium ... ..	17.0	20.0
Nickel plus chromium ...	25.0	—
Titanium ... ..	4 x C	—
or		
Niobium ... ..	8 x C	—
Sulphur ... ..	—	0.045
Phosphorus ... ..	—	0.045

1.2 The complete analysis of every cast shall be supplied to the inspector.

**2. Process of manufacture**

2.1 The steel shall be made by an electric process.

2.2 The ingots, blooms or billets from which the rods are rolled shall be machined all over to remove all surface defects. Alternatively, the billets shall be suitably dressed to remove all surface defects, pickled and if necessary further dressed until any remaining defects have been removed.

**3. Inspection and testing procedure**

3.1 The steel shall be inspected and tested in accordance with Clauses 1, 2, 3, 4, 5, 7 and 17 of Section One of British Standard 3S.100.

**SECTION TWO—WIRE**

**4. Manufacture**

4.1 Wires shall be made from material complying with Section One of this specification.

4.2 The material shall be free from harmful defects.

4.3 Any wire may be rejected for faults in manufacture, although it has been passed previously on chemical composition and mechanical properties.

**5. Condition**

5.1 The wire shall be supplied in the fully softened or the fully softened and lightly drawn condition.

5.2 Softening shall be carried out by heating to a temperature between 950°C and 1150°C and cooling quickly in air or quenching in oil or water, at the option of the manufacturer.

**6. Selection of test samples**

6.1 Wire in coils from the same cast, of the same nominal diameter and softened together shall be grouped in batches of not more than one cwt. When the weight of a single coil exceeds one cwt. it shall be regarded as a batch. Wires supplied in straight lengths shall be grouped together in such a manner as to be fully identified with the coils from which they have been cut.

6.2 The inspector shall select from each batch one test sample of sufficient length to allow the preparation of test pieces for the tensile and bend tests specified in Clause 7. Test samples shall not be heat treated nor mechanically worked before being tested.

**7. Mechanical tests**

7.1 The following tests shall be carried out to the satisfaction of the inspector:

*(a) Tensile test.*

The tensile strength of test pieces selected as specified in Clause 6 and complying with the requirements of British Standard 4A.4 shall be not less than 35 tonf/in<sup>2</sup>.

*(b) Single bend test.*

Test pieces selected as specified in Clause 6 shall be bent through an angle of 180° and closed flat, without showing signs of failure.

*(c) Special bend test.*

Test pieces selected as specified in Clause 6 shall be heated for 30 minutes at a temperature of 650°C and cooled in air. They shall then be immersed for 72 hours in a boiling solution of the following composition:

111 grammes copper sulphate (Cu SO<sub>4</sub>.5H<sub>2</sub>O),

98 grammes sulphuric acid (sp gr 1.83), made up to 1 litre with distilled water.

Precautions shall be taken during boiling to prevent concentration due to evaporation. Each test piece shall be bent through an angle of 90° over a radius of three times the nominal diameter and shall withstand this treatment without showing signs of failure.

**8. Nicked fracture test** (*for material ¼ in diameter and thicker only*).

8.1 One end of each wire shall be subjected to a nicked fracture test. The wire shall be nicked or sawn so that the area of the portion to be fractured is not less than one-half of the sectional area, and when broken by a minimum number of blows shall show a grey fibrous fracture, free from pipe or other defect.

8.2 When testing reveals a defect on fracture the wire under test shall be either rejected or submitted to further nicked fracture tests at both ends. If the fractures are satisfactory the wire shall be accepted.

**9. Re-tests**

9.1 If any test piece fails to pass the mechanical tests specified in Clause 7, the inspector shall reject the batch represented by the test piece, or at his discretion, adopt either of the following procedures:

*(a)* Select for test from the same batch two further samples, one of which shall be from the wire that failed, unless that wire has been withdrawn by the manufacturer. Test pieces prepared from these two samples shall comply with the requirements of Clause 7.

*(b)* Allow the batch to be re-softened as specified in Clause 5.2 and re-tested in accordance with the requirements of Clauses 6 and 7.

**10. Identification**

10.1 Straight lengths of wire of the same nominal diameter, passed by the inspector, shall be made into bundles, each of which shall bear a metal tag stamped with the mark of the inspector and such other marking as shall ensure the full identification of the material.

10.2 Coils of wire passed by the inspector shall bear a metal tag stamped with the mark of the inspector and such other marking as shall ensure full identification of the material.

**SECTION THREE-RIVETS AND SPLIT PINS****11. Manufacture**

11.1 Rivets and split pins shall be made from wires which have been inspected and passed as complying with Section Two of this specification.

**12. Freedom from defects**

12.1 The rivets and split pins shall be free from harmful defects.

12.2 Any rivets or split pins may be rejected for faults in manufacture or incorrectness of dimensions, although the wires from which they were made have been passed previously as complying with Section Two of this specification.

**13. Heat treatment**

13.1 The rivets shall be delivered in the fully softened condition.

13.2 The split pins shall be delivered as formed or in the fully softened condition at the option of the manufacturer.

13.3 Softening shall be effected by heating at a temperature between 950°C and 1150°C and cooling in air or quenching in oil or water.

**14. Identification**

14.1 Rivets and split pins of the same size, passed by the inspector, shall be packed in bags or boxes, each of which shall be stamped with the mark of the inspector and such other markings as shall ensure full identification of the material.

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Approved for issue,

E. W. RUSSELL,

Director of Materials Research and Development/Aviation.

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