

**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.

MINISTRY OF SUPPLY

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D.T.D. 818

*Amendment No. 1
November, 1957*

**Aircraft Material Specification
SILICONE RUBBER**

Table I, against (c) Elongation at break, for Compound Class M, Sub class 2
delete "250" and insert "200"

Approved for issue,

H. SUTTON,

Director of Materials Research and Development (Air)

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TWO PENCE NET

Aircraft Material Specification

SILICONE RUBBER

NOTE 1.—This specification is one of a series issued by the Ministry of Supply either to meet a limited requirement not covered by an existing British Standard or to serve as a basis for inspection of material the properties and uses of which are not sufficiently developed to warrant submission to the British Standards Institution for standardisation.

NOTE 2.—Part I of this specification defines compounded material for moulding, extruding and calendaring

There are three classes of material, suitable for use at operating temperatures up to 200 C (but see also Note 3) as follows:—

Class L— for general purposes.

Class M— for use at extremely low temperatures, where flexibility down to -75°C is required.

Class N— for use where low compression set is required.

Material in each class is sub-classified (1, 2, 3, 4 or 5) according to hardness.

The class and hardness of material required should be quoted in the contract or order, e.g. silicone rubber, Specification D.T.D. 818, Class M2.

Part II defines cured parts made from material complying with Part 1.

NOTE 3.—Where a maximum operating temperature lower than 200°C is required, the drawing or order may specify a correspondingly lower test temperature in Appendix III (test (g) in Table 1.)

NOTE 4.—Except where otherwise stated, the methods of test shall be as described in British Standard No. 903, "Methods of Testing Vulcanised Rubber".

PART I—COMPOUNDED RUBBER STOCK

1. Composition

The material shall consist essentially of silicone rubber gum fully compounded with a suitable vulcanising agent and filler.

2. Test Samples

The test sample shall consist of two suitably cured sheets of the material, one of which is $\frac{1}{8}$ in. thick and approximately 10 in. square, and the other 0.075 in. thick and approximately 3 in. square.

3. Tests

The tests listed in Table 1 shall be carried out on test pieces cut from the samples specified in Clause 2.

Each property of the material, when determined by the method specified, shall comply with the requirement also listed in Table 1.

No absolute limits are specified for specific gravity, but this will be determined and a nominal value agreed between the Director of Aeronautical Inspection (I.N.M.4) and the Manufacturer for each compound. The nominal value shall apply to the cured compound.

4. Routine Inspection

- (i) Each batch of compound shall be tested for compliance with the requirements of tests (a) to (d) in Table 1, by tests on the sample sheets defined in Clause 2. In addition, Class M compounds shall be tested for compliance with the requirements of test (f), and Class N compounds for compliance with the requirements of test (e).
- (ii) At least one batch in every ten batches of compound shall be tested for compliance with the requirements of all the tests listed for the compound in Table 1 by tests on the sample sheets defined in Clause 2.

5. Information

If fully compounded uncured material is supplied as complying with Part I of this Specification, the following information shall be given by the compounder:—

- (i) The class and hardness sub-class in addition to the D.T.D. Specification number.
- (ii) The compound reference coding.
- (iii) The batch number.
- (iv) The curing conditions for the test sheets defined in Clause 2.
- (v) The nominal value for the specific gravity of the cured compound.

TABLE 1

COMPOUND CLASS	L				M					N			
SUB CLASS	2.	3.	4.	5.	1.	2.	3.	4.	5.	2.	3.	4.	5.
Test:—													
(a) Hardness, ° B.S. (Thickness 2 x ¼ in. superimposed)	50±5	60±5	70±5	80±5	40±5	50±5	60±5	70±5	80±5	50±5	60±5	70±5	80±5
(b) Tensile Strength. lb./sq. in. (min.) (Type D test pieces)	700	700	650	600	600	600	600	600	600	600	600	600	600
(c) Elongation at break per cent (min.) (Type D test pieces)	200	200	175	150	250	250	200	150	100	120	100	80	60
(d) Specific Gravity at 20/20°C. (Procedure A)	Nominal ± 0.05				Nominal ± 0.05					Nominal ± 0.05			
(e) Compression Set, per cent (max.) (Appendix I)	—	—	—	—	—	—	—	—	—	20	20	20	20
(f) Brittleness Temperature, ° C. (max.) (Appendix II)	—55	—55	—55	—55	—75	—75	—75	—75	—75	—55	—55	—55	—55
(g) Resistance to Dry Heat:— (Appendix III)													
(1) Change in Hardness, B.S. degrees (max.)	10	10	10	10	15	15	15	15	15	15	15	15	15
(2) Tensile Strength deterioration, per cent (max.)	25	25	25	25	25	25	25	25	25	25	25	25	25
(3) Elongation at break, deterioration, per cent (max.)	50	50	50	50	75	75	75	75	75	50	50	50	50

PART II-CURED RUBBER PARTS

6. Material

The parts shall be made from material which has been tested and complies with Part I of this specification. The fabricated parts shall be cured to the same degree as the sample sheets defined in Clause 2.

7. Dimensions

The dimensions and tolerances of the parts shall be as quoted on the relevant drawings.

8. Freedom from Defects

The parts shall be free from surface imperfections, porosity, voids due to dust inclusions and other obvious defects likely to impair their usefulness or life.

9. Routine Inspection

A sample part of each design shall be taken periodically and tested for compliance with the requirement of test (d) in Table 1. The part shall also be subjected to the other tests except test (g) in Table 1 where the appropriate test pieces can be cut from it. If necessary, type C dumb-bells may be used for tests (b) and (c).

APPENDIX I

Method for Determination of Compression Set

The method of test will be as described in B.S. 903, Constant Deflection Method using Type 1 test pieces made up from two pieces of $\frac{1}{8}$ in. thick material if necessary. The temperature of test will be $150 \pm 5^\circ\text{C}$. and the recovery period 60 minutes, followed by 10 minutes in water at $20 \pm 2^\circ\text{C}$.

The percentage compression employed will be 25 for all compounds.

The result will be expressed as a percentage of the applied compression.

APPENDIX II

Method for Determination of Flexibility at low temperature

Flexibility at low temperature will be determined as described in A.S.T.M. Method No. D746-55T, Procedure B, except that the width of the test pieces will be 0.100 ± 0.015 in.

(This method is now under consideration by the International Organisation for Standardisation, and may be modified in the light of I.S.O. decisions).

For routine testing, any other method which confirms that the material does not exhibit brittle failure under similar impact conditions at the specified temperature may be used.

APPENDIX III

Method for Determination of Resistance to Dry Heat

Type D dumb-bell test pieces, $\frac{1}{8}$ in. thick, will be suspended for 14 days in an air oven at $200 \pm 5^\circ\text{C}$ and then allowed to cool and condition at $20 \pm 2^\circ\text{C}$. for 24 hours before testing. The oven will be arranged to have 3 to 10 complete changes of air per hour.

The hardness will be determined on the wide portions of two superimposed test pieces before and after heating and the difference between the average values reported as the change due to dry heat.

The median values for tensile strength and elongation at break after heating will be subtracted from the corresponding values before heating and the results expressed as percentages of the values before heating.

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Director of Materials Research and Development (Air)

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