

**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.

**PROCUREMENT EXECUTIVE  
MINISTRY OF DEFENCE**

**D.T.D. 5633**  
*Amendment No 1*  
*January 1984*

*Aerospace Material Specification*

**GENERAL PURPOSE LOCKING, SEALING AND RETAINING MATERIALS ANAEROBIC  
POLYMERISABLE COMPOUNDS GIVING VERY HIGH TORQUE STRENGTHS**

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**Section 1 Scope**

*Add new paragraph (before Note)*

Anaerobic adhesives complying with this specification can cause severe solvent stress crazing in some stressed thermoplastic components and aircraft organic transparency materials, leading to a catastrophic failure.

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**PROCUREMENT EXECUTIVE  
MINISTRY OF DEFENCE**

**D.T.D. 5630  
to 5633 inc**

*Amendment No. 2*

*August 1986*

*Aerospace Materials Specification*

**GENERAL PURPOSE LOCKING, SEALING AND  
RETAINING MATERIALS, ANAEROBIC POLYMERISABLE  
COMPOUNDS, ALL GRADES (D.T.D. 5630 to 5633 inclusive)**

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**Section 4 Routine Batch Control**

*para 4.1 Amend to read in the relevant Table.*

Every batch of material shall be tested for compliance with test (a), (b), (c), (d), (h), (i) and (j).

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## Aerospace Material Specification

### GENERAL PURPOSE LOCKING, SEALING AND RETAINING MATERIALS: ANAEROBIC POLYMERISABLE COMPOUNDS GIVING VERY HIGH TORQUE STRENGTHS

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*NOTE 1. This specification is one of a series issued by the Procurement Executive, Ministry of Defence, either to meet a limited requirement not covered by an existing British Standard for aerospace material, 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 standardization.*

*NOTE 2. The tests employed in this specification are chosen for their reproducibility and ability to control the properties of the material. They are not intended to be simulated service tests, which, because of variability of test conditions, may be unsatisfactory for control purposes.*

*NOTE 3. The intended applications and the limitations of materials to this specification are given in Section 1 of the specification and are for guidance only. In case of doubt users are advised to confirm the suitability of the material for any given application with the Design Authority.*

*NOTE 4. This Specification calls for the use of substances and/or test procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and in no way absolves either the supplier or the user from statutory obligations related to health and safety at any stage of manufacture or use.*

*This Specification has been devised for the use of the Ministry of Defence and its contractors in the execution of contracts for the Ministry and, subject to the Unfair Contract Terms Act 1977, the Ministry will not be liable in any way whatever (including but without limitation negligence on the part of the Ministry, its Servants or agents) where the Specification is used for other purposes.*

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## SECTION 1

### Scope

The materials covered by this specification are one part anaerobic polymerisable compounds which polymerise upon the exclusion of oxygen and activation by a metal surface to form bonds which have a very high strength.

By the terms of this specification this bond strength is quantified as being within a certain range when determined according to a test procedure described in DTD 5628.

It must be emphasised that this classification of the strength of the bond is arbitrary, and has been done to provide a simple but effective means of classification.

Attention must also be drawn to the fact that the torque test chosen for this classification normally gives a spread of results, and that the value reported is a straight arithmetic mean. No attempt has been made to define an acceptable coefficient of variation, and the user of this specification should appreciate the simplicity of the test and the classification system.

Further gradation of these compounds is provided by consideration of their viscosities. The viscosity bands specified are considered typical of present commercial material and offering a sufficient spread of values to satisfy most Ministry of Defence purposes. The introduction of further bands will be considered in the light of experience.

General applications of these materials include locking and sealing threaded fasteners and assembling slip-fitted parts. The materials should not normally be used on electrical connections where the assembled connection is required to carry electrical currents.

Some of the compounds are compatible with certain explosives and propellants, but the appropriate Design Authority Approval must be obtained before use in proximity to such materials.

*NOTE: Similar materials providing different torque strengths are covered by specifications DTD 5629, 5630, 5631 and 5632.*

## SECTION 2

### Related Documents

Reference is made in this document to the following:

- DTD 5628 Test Methods and Procurement Procedures for one part anaerobic polymerisable compounds for locking, sealing and retaining.
- DTD 5629 General purpose locking, sealing and retaining materials: anaerobic polymerisable compounds giving very low torque strengths.
- DTD 5630 General purpose locking, sealing and retaining materials: anaerobic polymerisable compounds giving low torque strengths.
- DTD 5631 General purpose locking, sealing and retaining materials: anaerobic polymerisable compounds giving medium torque strengths.
- DTD 5632 General purpose locking, sealing and retaining materials: anaerobic polymerisable compounds giving high torque strengths.

Related documents listed are those applicable at the date of publication of this specification. Their current applicability must be confirmed by all users of the specification. The Quality Assurance Authority will supply, on request, information concerning any changes that may be necessary due to cancellation, replacement, supersession or amendment of any related document.

## SECTION 3

### General Requirements

- 3.1 In addition of the specific requirements stipulated in this specification, the procedures and requirements given in DTD 5628 shall also apply.
- 3.2 The properties of material supplied to this specification shall comply with the requirements given in the Table.

## SECTION 4

### Routine Batch Control

- 4.1 Every batch of material shall be tested for compliance with tests (a), (b), (c), (d), (h), and (i) in the Table.
- 4.2 If the sample tested fails to meet any of these requirements then two further samples may be tested from that batch. Both samples must meet all these requirements before the batch can be released as conforming to the requirements of this specification.
- 4.3 The Quality Assurance Authority may, at any time, require any batch of material to be checked for compliance with any requirement in the Table.

	Test	Requirements				Test method in DTD 5628
		Grade 1	Grade 2	Grade 3	Grade 4	
(a)	Maximum torque, Nm, minimum	19	19	19	19	Appendix D
(b)	Colour	Green	Green	Green	Green	Appendix A
(c)	Fluorescence	Subject to contract				Appendix B
(d)	Viscosity, $\text{mm}^2\text{s}^{-1}$ Viscosity, Pas, at 20 rpm at 2 rpm Thixotropic index	50	125 ± 25	500 ± 250	8 ± 3 70 ± 15 8 ± 2	Appendix C
(e)	Minimum % retention of torque strength after (i) 1000 hours at 100°C (ii) 1000 hours at 150°C (iii) 168 hours in boiling water (iv) 2 hours at -55°C	95 70 70 95	95 70 70 95	95 70 70 95	95 70 70 95	Appendix E Appendix E Appendix F Appendix G
(f)	Static shear strength, MPa, min	*	17	17	17	Appendix H
(g)	Minimum % retention of shear strength after (i) 1000 hours at 100°C (ii) 1000 hours at 150°C		95 70	95 70	95 70	Appendix I
(h)	Stability at 100°C, mins, minimum	10	10	10	10	Appendix J
(i)	Excessive cure rate, mins minimum	4	4	4	4	Appendix K
(j)	Ability to set on cadmium, minutes	30	30	30	30	Appendix L

\* For this grade the static shear strength is very dependent on the gap and surface roughness of the pin and collar, and no requirement is given. When use is made for slip fitted parts the suitability should be established for specific conditions.

Approved for issue,

D. K. Thomas

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