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400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 2518B

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Reaffirmed APR 2006

Superseding AMS 2518A

Thread Compound, Anti-Seize, Graphite-Petrolatum

1. SCOPE:

1.1 Form:

This specification covers an anti-seize compound in the form of a grease.

1.2 Application:

This compound has been used as an anti-seize compound on aircraft engine spark plugs and threaded fasteners and fittings, but usage is not limited to such applications. This compound may be used safely in contact with austenitic corrosion-resistant steels, titanium, nickel, and cobalt alloys, and similar corrosion-resistant metals and alloys. This compound contains graphite which may promote corrosion of aluminum, magnesium, ferrous, zinc, and cadmium alloys or plated coatings and should not be used in contact with such metals.

1.3 Safety - Hazardous Materials:

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS:

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been canceled and no superseding document has been specified, the last published issue of that document shall apply.

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-7161 FAX: (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790
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2.1 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM C 136	Sieve Analysis of Fine and Coarse Aggregates
ASTM C 560	Chemical Analysis of Graphite
ASTM C 561	Ash in Graphite Sample
ASTM D 91	Precipitation Number of Lubricating Oils
ASTM D 92	Flash and Fire Points by Cleveland Open Cup
ASTM D 127	Drop Melting Point of Petroleum Wax, Including Petrolatum
ASTM D 130	Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test
ASTM D 445	Kinematic Viscosity of Transparent and Opaque Liquids (the Calculation of Dynamic Viscosity)
ASTM D 482	Ash from Petroleum Products
ASTM D 664	Acid Number of Petroleum Products by Potentiometric Titration
ASTM D 937	Cone Penetration of Petrolatum
ASTM D 1500	ASTM Color of Petroleum Products (ASTM Color Scale)
ASTM D 2273	Trace Sediment in Lubricating Oils

2.2 U.S. Government Publications:

Available from DODSSP Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

FED-STD-791 Lubricants, Liquid Fuels, and Related Products; Method of Testing

3. TECHNICAL REQUIREMENTS:

3.1 Composition (Percent by Weight):

As shown in Table 1.

TABLE 1

Ingredient	min	max
Petrolatum	48	52
Graphite	48	52

3.2 Properties:

The individual components and the product shall conform to the following requirements; tests shall be performed on the components and product supplied and in accordance with specified test methods, insofar as practicable:

3.2.1 Petrolatum: Shall be uniform in quality, clean, homogeneous, and free from abrasive and foreign materials and shall conform to the requirements shown in Table 2.

TABLE 2 - Petrolatum Properties

	Property	Value	Test Method
3.2.1.1	Color	2 to 8	ASTM D 1500
3.2.1.2	Melting Point	45 to 60 °C (113 to 140 °F)	ASTM D 127
3.2.1.3	Viscosity, Kinematic at 100 °C (212 °F)	11.6 to 18.0 cSt	ASTM D 445
3.2.1.4	Flash Point, minimum	200 °C (392 °F)	ASTM D 92
3.2.1.5	Penetration (unworked)	150 to 275	ASTM D 937
3.2.1.6	Corrosion at 100 °C ± 1 (212 °F ± 2) 24 hours, (copper strip)	No discoloration of petrolatum or copper strip	ASTM D 130
3.2.1.7	Ash Content, by weight, maximum	0.1%	ASTM D 482
3.2.1.8	Neutralization Number, maximum	0.1	ASTM D 664
3.2.1.9	Precipitation Number, maximum	0.10	4.5.2.1
3.2.1.10	Abrasive Material	None	4.5.2.2
3.2.1.11	Evaporation Loss, maximum	2%	4.5.2.3

3.2.2 Graphite: Shall be a uniform, dry powder, either natural or manufactured, free from caking or lumping, and free from adulterants, abrasives, and foreign matter, and shall conform to the requirements shown in Table 3.

TABLE 3 - Graphite Properties

	Property	Value	Test Method
3.2.2.1	Graphite, Carbon Content, minimum	95%	ASTM C 560
3.2.2.2	Ash Content, maximum	2.5%	ASTM C 561
3.2.3.3	Particle Size (retained on 100 mesh (150 µm) screen)	None	ASTM C 136
	(retained on 200 mesh (75 µm) screen), maximum	2.0%	

3.2.3 Product: The product, mixed according to the composition of 3.1, shall conform to the requirements shown in Table 4; tests shall be performed on the product supplied and in accordance with specified test methods, insofar as practicable:

TABLE 4 - Compound Properties

	Property	Value	Test Method
3.2.3.1	Worked Penetration	170 to 260	ASTM D 937
3.2.3.2	Stability	No separation of mixture	4.5.1

3.3 Quality:

The product, as received by purchaser, shall be uniform in quality and condition and free from foreign materials and from other contaminants detrimental to usage of the product.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the specified requirements.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Worked penetration (3.2.3.1) and stability (3.2.3.2) are acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: All technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of the product to a purchaser, when a change in ingredients and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.3 Sampling and Testing:

Shall be as follows:

4.3.1 For Acceptance Tests: A lot shall be 500 pounds (227 kg) or less of product produced in a single production run and presented for vendor’s inspection at one time.

4.3.1.1 Bulk Quantity: Samples for tests shall be selected in accordance with FED-STD-791, Method 8001.

4.3.1.2 Filled Containers: A random sample of filled containers shall be taken from each lot to verify conformance to all requirements of this specification regarding fill, closure, marking, and other requirements not involving tests.

4.3.2 For Preproduction Tests: As required by the specified test method, unless otherwise specified by purchaser.

4.4 Approval:

4.4.1 Sample compound shall be approved by purchaser before compound for production use is supplied, unless such approval be waived by purchaser. Results of tests on production compound shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production compound which are essentially the same as those used on the approved sample compound. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in ingredients and/or processing and, when requested, sample compound. Production compound made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Test Methods:

Shall be as follows:

4.5.1 Stability of Compound: Place 100 grams of the compound in each of two cone-shaped centrifuge tubes (See apparatus description in ASTM D 2273) and centrifuge at 1500 rpm for 20 minutes. Separation shall be defined as droplets or a layer of oil appearing on the surface of the compound after centrifuging.

4.5.2 Petrolatum:

4.5.2.1 Precipitation Number: Melt a sample of the petrolatum in a small beaker, stir vigorously, and transfer 10 mL of the melted material into a graduated centrifuge tube. Add 70 to 80 mL of precipitation naphtha conforming to ASTM D 91. Immerse the tube in a water bath at 65 °C ± 3 (149 °F ± 5) and allow to remain, with occasional shaking, until the petrolatum grease is in solution. Add precipitation naphtha to make 100 mL. Invert at least 20 times and proceed in accordance with ASTM D 91.

4.5.2.2 Abrasive Material: Precipitate obtained from the precipitation number test (See 4.5.2.1) shall be rubbed between two smooth pieces of plate glass. If grittiness is felt or if scratches appear on the glass plates, abrasive material is present.

4.5.2.3 Evaporation Loss: Place 5 grams of the petrolatum to be tested in a suitable crucible or container of tared weight. Heat in an oven maintained at 105 to 110 °C (221 to 230 °F) for 60 minutes ± 5. Remove container, cool in a desiccator to 25 °C ± 3 (77 °F ± 5), and weigh. Loss in weight shall be calculated in percent as evaporation loss.