SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS3217/8

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Test Slabs, Fluoroelastomer (FKM), 70-80 Hardness, for Improved Gas Turbine Engine Oil Compatibility

RATIONALE

There is an industry need to provide an FKM reference elastomer with demonstrated compatibility to a variety of gas turbine engine oils, including higher thermo-oxidative stability (HTS) lubricants, including those conforming to MIL-PRF-23699 Class HTS, MIL-PRF-7808 Grade 4 and AS5780 Class HPC, at elevated temperature (392 °F / 200 °C).

1. SCOPE

1.1 Form

This specification covers a fluorocarbon elastomer as designated by ASTM D 1418 FKM Type 3 rubber stock in the form of molded test slabs.

1.2 Application

See AMS3217.

2. APPLICABLE DOCUMENTS

See AMS3217.

3. TECHNICAL REQUIREMENTS

3.1 Basic Specifications

The complete requirements for test slabs described herein and their procurement shall consist of this document and the latest issue of the basic specification AMS3217.

3.2 Material

Shall be a fluoroelastomer (FKM) compounded to the formulation shown in Table 1.

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TABLE 1 - FORMULATION

Ingredients	Parts
Viton® GLT-600S or equivalent*	100.0 (See 3.2.1)
Elastomag® 170 or equivalent*	3.0 (See 3.2.2)
Sterling MT®, N990 or equivalent ASTM D 1765, N990 Classification	30.0 (See 3.2.1)
Diak™ 7 or equivalent*	3.0 (See 3.2.2)
Varox® DBPH-50 or equivalent*	1.5 (See 3.2.2)
Press Cure: 10 minutes ± 0.5 at 347 °F ± 5 (175 °C ± 2)	
Oven Cure: 8 hours ± 0.5 at 450 °F ± 5 (232 °C ± 2)	
*Equivalent ingredients must be approved by AMS Committee “CE”	

3.2.1 Weigh parts to the nearest 0.1 gram.

3.2.2 Weigh parts to the nearest 0.02 gram.

3.3 Processing

After the elastomer has banded on the rubber mill, premix the other ingredients and add to the milling compound.

3.3.1 The stock shall not be allowed to become hotter than can be handled with the bare hands.

3.3.2 After all ingredients have been incorporated and the stock has been thoroughly milled, the stock shall be passed 10 times through a tight mill.

3.3.3 Suitable preforms shall be cut from the freshly milled stock and molded into test slabs as specified in ASTM D 3182, Figure 1.

3.4 Properties

Shall be as shown in Table 2.

TABLE 2 - PROPERTIES

Paragraph	Property	Requirement	Test Method
3.4.1	Hardness, Durometer “A” or equivalent	75 ± 5	ASTM D 2240
3.4.2	Tensile Strength, minimum	1600 psi (11.03 MPa)	ASTM D 412
3.4.3	Elongation, minimum	175%	ASTM D 412
3.4.4	Specific Gravity	1.81 ± 0.02	ASTM D 297, Hydrostatic Method
3.4.5	Synthetic Lubricant Immersion		AMS3085 392 °F ± 5 (200 °C ± 2) 70 hours ± 0.5
3.4.5.1	Hardness Change, Durometer “A” or equivalent	-15 to 0	ASTM D 2240
3.4.5.2	Tensile Strength Change, max	-35%	ASTM D 412
3.4.5.3	Elongation Change, max	-20%	ASTM D 412
3.4.5.4	Volume Change, max	0 to +20%	ASTM D 471