AEROSPACE MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 3238A

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SYNTHETIC RUBBER
Phosphate Ester Resistant
Butyl Type (65 - 75)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. FORM: Sheet, strip, molded shapes, extrusions, or as ordered.

3. APPLICATION: Primarily for parts such as O-rings, gaskets, grommets, and seals requiring resistance to phosphate esters or low permeability to gases. Not suitable for use in contact with petroleum base fluids due to excessive swell.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Condition: Unless otherwise specified, a suitably cured product shall be furnished.

4.1.2 Weathering: When specified, the product shall have weather resistance acceptable to the purchaser as determined by a procedure agreed upon by purchaser and vendor.

4.1.3 Corrosion: The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable.

4.2 Properties: The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with listed ASTM methods, insofar as practicable. When the product supplied is an extrusion of such shape that suitable test specimens cannot be cut from the product, a separate flat strip test sample shall be supplied upon request. This strip shall be prepared from a 1 in. ± 1/16 OD by 0.075 in ± 0.008 thick wall tubing which shall be mechanically split and flattened into a strip while being extruded, and then cured in the same manner as production material.

4.2.1 As Received:

4.2.1.1 Hardness, Durometer "A" or equiv.	70 ± 5	
4.2.1.2 Tensile Strength, psi, min	1500	ASTM D412-51T, Die B or C
4.2.1.3 Elongation, %, min	300	ASTM D412-51T, Die B or C
4.2.1.4 Tear Strength, lb per in.	To be Reported	ASTM D624-48, Die B

Printed in U. S. A.

4.2.2	Phosphate Ester Resistance: (Immediate Deteriorated Properties)		ASTM D471-55T Medium: Tri-n-butyl phosphate Temperature: 212 F ± 2 Time: 70 hr
4.2.2.1 Ø	Hardness Change, Durometer "A" or equiv.	0 to -30	
4.2.2.2	Tensile Strength Change, %, max (based on area before immersion)	-30	
4.2.2.3	Elongation Change, %, max	-20	
4.2.2.4	Volume Change (Method A), %	0 to +30	
4.2.3	Dry Heat Resistance:		ASTM D573-53 Temperature: 212 F ± 2 Time: 70 hr
4.2.3.1	Hardness Change, Durometer "A" or equiv.	0 to +10	
4.2.3.2	Tensile Strength Change, %, max	-20	
4.2.3.3	Elongation Change, %, max	-40	
4.2.4	Compression Set:		ASTM D395-55, Method B Temperature: 212 F ± 2 Time: 70 hr Compressed to 75% original thickness
4.2.4.1	Per cent of original deflection, max	85	
4.2.4.2	Per cent of original thickness, max	22	
4.2.5	Low Temperature Resistance:		
Ø 4.2.5.1	Brittleness	Pass	ASTM D746-55T, Procedure B Temperature: -40 F ± 2 Time: 10 min
4.2.5.2 Ø	Young's Modulus, psi, max (See Note 1)	30,000	ASTM D797-46 Temperature: -40 F ± 2

Note 1. This test is not normally required but may be used in case of disagreement on the results of the brittleness test.

5. QUALITY: The product shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from imperfections detrimental to fabrication, appearance, or performance of parts.

6. TOLERANCES: Unless otherwise specified, the following tolerances apply:

6.1 Sheet and Strip:

Nominal Thickness Inches	Tolerance, Inch Plus and Minus
1/8 and under	1/64
Over 1/8 to 1/2, incl	1/32
Over 1/2	3/64

6.2 Tubing:

6.2.1

Nominal OD or ID (not both), Inches	Tolerance, Inch Plus and Minus	Ovality, % (See Note 2)
1/2 and under	0.020	10
Over 1/2 to 1, incl	0.030	15
Over 1	4%	15

Note 2. Ovality applies to tubing ordered in straight lengths with wall thickness of 1/16 in. and over, and shall be computed from the difference of the minor and major axis diameter measurements, taken at the same location on the tube, expressed as a percentage of the nominal diameter.

6.2.2

Nominal Wall Thickness Inch	Tolerance Plus and Minus
Under 1/16	0.005 in.
1/16 and over	10%

7. REPORTS:

7.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product meets the requirements of this specification. This report shall include the purchase order number, material specification number, vendor's compound number, form or part number, and quantity.

7.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

8. IDENTIFICATION: Unless otherwise specified, all material shall be identified in accordance with the latest issue of AMS 2810.

9. PACKAGING:

9.1 Packaging shall be accomplished in such a manner as to ensure that the product, during shipment and storage, will not be permanently distorted, and will be protected against damage from exposure to weather or any normal hazard.

9.2 Each package shall be permanently and legibly marked in accordance with the latest issue of AMS 2810.

10. APPROVAL:

10.1 To assure adequate performance characteristics, compounds shall be approved by purchaser before material for production use is supplied, unless such approval be waived. Results of tests on production material shall be essentially equivalent to those on the approved sample.