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MATERIAL MANUAL

FIRST ISSUED 9-16-48	MATERIAL SPECIFICATION	SPECIFICATION NO: EMS 605		
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		K	11/21/02	D62725

NAME: SYNTHETIC RUBBER – HEAT & OIL RESISTANT – LOW SET FOR "O" RINGS (BUNA N)

REQUIREMENTS:

1. Standards and Practices: As appear in AMS 3227** as amended herein.

2. Properties:

(a) As received:

(1)	Durometer Hardness	60 ± 5
(2)	Tensile Strength	1500 psi Min.
(3)	Elongation	300% Minimum

(b) After Oil Aging 70 Hours at 300°F in IRM 903 Oil (ASTM D471** with 1" x 8" test tube and sample surface area of 5 square inches, if part size permits).

(1)	Elongation Change	- 50% Maximum
(2)	Duro Change	- 15 to +5
(3)	Volume Change	0 to +35%

(c) After Oil Aging 70 Hours at 300°F in ASTM #1 Oil (ASTM D471** with 1" x 8 test tube and sample surface area of 5 square inches, if part size permits).

(1)	Tensile Strength Change	- 30% Maximum
(2)	Elongation Change	- 50% Maximum
(3)	Duro Change	- 10 to + 10
(4)	Volume Change	- 7 to + 5%

(d) After Heat Aging 70 Hours at 250°F (ASTM D865** with 1" x 8" test tubes)[1].

(1)	Tensile Strength Change	- 50% Maximum
(2)	Duro Hardness Change	0 to + 15
(3)	Elongation Change	- 60% Maximum

[1]For seal rings, a 1-3/4" length to be used instead of standard, sample; to pass Duro Hardness Test and to bend 180° flat on itself without cracking. Grommets to pass bend test only.

(e) Compression set after 30% compression for 70 Hours at 250° ± 2°F (ASTM D395**)[2], Method "B", as follows:

Diameter or Thickness	Molded Maximum, %	Extruded or Lathe Cut, Maximum, %
.125" to Less	55	--
.126" to .150"	50	--
.151" to .200"	45	50
Over .200" to .275"	40	45
Over .275" to .400"	35	40
Over .400"	30	35

[2]Sample for Seal Rings ---------- 2" Length
Sample for Grommet ---------- Entire Grommet.

3. Tolerances (Unless otherwise specified on the engineering drawing): NOTE: The thickness shall be measured by a dial micrometer graduated in thousandths of an inch having a flat presser foot 1/4" in diameter, actuated by a load of 3 ± 0.1 oz., except that for molded rings having a cross-sectional thickness of less than 0.25" the micrometer shall be actuated by a load of 0.7 ± 0.1 oz.

Sheet and Strip 1/8" and less thick	± 1/64"
Sheet and Strip Over 1/8" to 1/2" incl. thick	± 1/32"
Sheet and Strip Over 1/2" thick	± 3/64"
Tubing and Molded Hose Less than 1/16" thick wall	± .005"
Tubing and Molded Hose Over 1/16" thick wall	± 10%
Molded Parts, Section	± .010"
O Rings, Section, 1/8" and Less	± 0.003"
Over 1/8" to 3/16", incl.	± 0.004"
Over 3/16"	± 0.005"
Extrusions, Section	± 0.010"

4. Color: Black, unless otherwise specified on the engineering drawing.

5. Identification: All shipments to be identified as EMS 605 Rubber.

NOTE: A PPAP with sample parts shall be submitted and approved by the Materials Engineering Department before shipment of any such parts for production use. Once a part has been approved, there shall be no change in method of manufacture without reapproval.

**NOTE: Latest Revision

GENERAL INFORMATION:

This compound is used for conditions of prolonged exposure to hot oil and coolants where minimum compression set is of primary importance as well as minimum deterioration of other properties.

DRAFTING INFORMATION:

The following designation shall appear on the drawing:

MATERIAL: EMS 605 RUBBER

NOTE: These specifications were developed without considering whether patents may or may not be involved. In all cases, therefore, the supplier shall be required to assume patent liability.