

## MATERIAL MANUAL

FIRST ISSUED 9-30-47	MATERIAL SPECIFICATION  ELECTRO-MOTIVE DIVISION GENERAL MOTORS CORPORATION LA GRANGE, ILLINOIS	SPECIFICATION NO: EMS 602		
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APPROVED B.L. Braglia		N	08/20/03	D66254
NAME: SYNTHETIC RUBBER – NEOPRENE TYPE – WEATHER RESISTANT				

**SCOPE:** This specification covers various grades of neoprene rubber, each with definite physical property requisites.

**REQUIREMENTS:**

- Standards and Practices:** As appear in ASTM D2000\*, as herein amended.
- Properties:**

EMS Grade Duro No.	Duro Hard- ness	Ten. Str. Min. PSI	Aged 70 Hrs. in IRM 903 Oil at 212°F (100°C)			Heat Aged 70 Hrs. at 212°F (100°C)			Maximum Compression Set After 22 Hours At 212°F %
			Volume Change %	Max. Ten. Str. Chg. %	Max. Elong. Change %	Max. Ten. Str. Chng. %	Max. Ult. Elong. Change %	Max. Duro Change	
5	5±5	300	70-120	-85	-60	-15	-60	+30	
15	15±5	400	70-120	-85	-60	-15	-60	+30	
30	30±5	1000	50-120	-80	-60	-15	-40	+20	50 <sup>1</sup>
40	40±5	1500	50-120	-75	-55	-15	-40	+15	50 <sup>2</sup>
50	50±5	1200	40-100	-70	-55	-15	-40	+20	50 <sup>2</sup>
60	60±5	2000	40-110	-65	-55	-15	-40	+15	50 <sup>2</sup>
70	70±5	2000	30-100	-65	-55	-15	-40	+15	50 <sup>3</sup>
71	70±5	1000	30-100	-65	-50	-15	-55	+15	80 <sup>3</sup>
80	80±5	1500	20- 80	-45	-30	-15	-40	+15	50 <sup>3</sup>
85**	85±5	1000	20- 80	-45	-30	-15	-40	+15	50 <sup>3</sup>

Notes <sup>1-3</sup> compression set requirements.

<sup>1</sup> Compressed 40%

<sup>2</sup> Compressed 30%

<sup>3</sup> Compressed 25%

\*\* Self-Extinguishing.

3. Low Temperature Brittleness Test (ASTM D2137\*, Method A): -40°F.

4. Tolerances (Unless Otherwise Specified on the Engineering Drawing): Note: For dimensional inspection the thickness shall be measured by a dial micrometer graduate in thousandths of an inch having a flat presser foot ¼" 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 dial micrometer shall be actuated by a load of 0.7 ± 0.1 oz.

## MATERIALS MANUAL

GENERAL MOTORS CORPORATION LA GRANGE, ILLINOIS	<b>MATERIAL SPECIFICATION</b> ELECTRO-MOTIVE DIVISION	SPECIFICATION NO. EMS 602 Rev. N (CONTINUED)
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4. Tolerances (Unless Otherwise Specified on the Engineering Drawing):

Sheet & Strip 1/8" and less thick -----	± 1/64"
Sheet & Strip over 1/8" to 1/2" incl. thick -----	± 132"
Sheet & Strip over 1/2" thick -----	± 3/64"
Tubing & Molded Hose less than 1/16" wall thickness -----	± .005"
Tubing & Molded Hose over 1/16" wall thickness -----	± 10%
Molded Parts, section -----	± .010"
O Rings, Section 1/8" & Less -----	± 0.003"
over 1/8" to 3/16" incl. -----	± 0.004"
over 3/16" -----	± 0.005"
Extrusions, section -----	± 0.010"

5. Color: Black, unless otherwise specified on the engineering drawing.
6. Identification: All shipments to be identified as EMS 602 Rubber and Duro grade.
7. Test Sample: A PPAP and sample parts shall be submitted to 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 compounding or processing without reapproval through PPAP procedures.

\*Note: Latest Revision

GENERAL INFORMATION:

This compound has good resistance to aging and good oil resistance. It is used in traction motor air ducts (60 Duro) and in some EMD designed window channels and weather seals, although EMS 606 is the standard commercial weather seal material. EMS 602 is suitable for bumper pads and chafing strips (in the higher Duro grades) and for gaskets of the weather seal type where infrequent removals make long lived materials necessary, and justify the extra cost. (Grade 71 was first used for cable cleats.  
(Grade 85

EMS 602 is available in sheet, strip, tubing, extruded and molded shapes.

DRAFTING INFORMATION:

Where use of this material is specified, it shall be designated as:

MATERIAL: EMS 602 RUBBER

\_\_\_\_\_ DURO

Inserting the appropriate hardness designation.

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.