

MATERIAL MANUAL

FIRST ISSUED 12-14-84	MATERIAL SPECIFICATION ELECTRO-MOTIVE DIVISION GENERAL MOTORS CORPORATION LA GRANGE, ILLINOIS	SPECIFICATION NO EMS 630		
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NAME: RUBBER-INORGANIC FIBER GASKET SHEET (ASBESTOS FREE), MODERATE COMPRESSIBILITY				

NOTE: Prior to revision C of this specification, EMS 630 covered three grades of gasket material. When an existing drawing specifies EMS 630 grade 1 or 2 – use EMS 630, current revision. Where existing drawings specify EMS 630 grade 3 – use EMS 631.

REQUIREMENTS:

1. Composition: Gasket sheet to be composed of NON-ASBESTOS, inorganic materials and reinforcing agents, bound by Nitrile Butadiene (NBR) synthetic rubber.

2. Properties^a:

Material to meet ASTM F104 F722121B4E22M7

As Received ^b :	
Compressibility @ 5000 PSI (ASTM F36), %	5 - 15
Recovery (ASTM F36), % Minimum	60
Tensile Strength (ASTM F152), PSI min. (machine direction)	3000
After immersion in fluids (ASTM F146):	
IRM 903 – 5 hours at 300°F:	
Thickness Increase, % Maximum	15
Weight Increase, % Maximum	15
ASTM Fuel B – 5 hours at 70-85°F:	
Thickness Increase, % Maximum	10
Weight Increase, % Maximum	15

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^a – All ASTM standards to be latest date of revision.

^b – All test values pertain to 1/32 in. thick lab samples. Testing of other thicknesses may be required, subject to agreement between EMD and the supplier.

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3. Thickness Tolerance. $\pm 10\%$ of Specified Thickness.

Specimens shall be measured with a dial type gage with a presser foot of $.25 \pm 0.01$ inch diameter, actuated by a dead weight load of 9 ± 0.1 oz. The dial shall be graduated in 0.001 inch or smaller units and readings shall be estimated to the nearest 0.0001 inch. The anvil shall have a diameter not less than that of the presser foot.

4. Coatings & Adhesives*:

- a. Anti-Stick ("Release") Coating. When specified on the Engineering drawing, the gasket shall be supplied with an anti-stick coating, to be applied by the sheet manufacturer or the gasket cutter. Coated gaskets shall not delaminate when peeled off mating surfaces. The coating shall not be corrosive to metal surfaces.

All anti-stick coatings are subject to approval by EMD Materials and Design Engineering groups under the GM Production Part Approval Process (PPAP). Coatings must pass EMD Standard Laboratory Practice No. 26 – Gasket Release Coatings Test.

- b. Pressure Sensitive Adhesive: When specified on the Engineering drawing, the gasket shall be supplied with a pressure sensitive adhesive (on the indicated face or area) protected with a peel-back film to be removed at the time of installation. Adhesives are subject to approval by EMD Materials and Design Engineering groups under the GM Production Part Approval Process (PPAP).

THE PEEL-BACK FILM SHALL BE INK-STAMPED AS FOLLOWS:

"REMOVE PRIOR TO INSTALLATION"

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*These options are mutually exclusive and should never be specified on the same drawing.

5. Identification: Each gasket shall have the EMD part number, EMD insignia and vendor identifications stamped thereon. Ink stamping may be used on all thicknesses of gasket material. Die stamping may be used on thicknesses 1/32 inch or greater provided that the stamp does not objectionably increase the thickness of the gasket or completely cut through the material. At least 1/8 inch of material shall surround the die stamping.

NOTE: If the gasket is too small to have both the EMD insignia and the EMD part number stamped thereon, the part number may be omitted. The EMD INSIGNIA MUST APPEAR ON EACH GASKET.

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6. Material Certifications: The gasket fabricator (cutter) shall obtain from the gasket sheet manufacturer, a test report, showing the sheet production lot number, date of sheet manufacture, test results for each of the properties specified in this EMS and (where applicable) the designation of the anti stick coating applied to the material by the sheet manufacturer.

The gasket cutter shall furnish to EMD Incoming Quality Assurance, a copy of the sheet manufacturer's test report and (where applicable) the designation of any anti-stick coating or adhesive applied by the cutter.

Once a year the gasket fabricator shall obtain from the gasket sheet manufacturer full test results of each of the properties specified in this EMS and furnish to EMD.

The gasket cutter shall also maintain copies of all of the above information, available to EMD on request.

7. Qualification of Source: Both the suppliers of sheet materials and the gasket cutters must be approved by EMD Engineering, Purchasing and Quality Assurance under the GM Production Part Approval Process (PPAP). Approvals shall be based on an evaluation of representative samples of the base sheet material or actual cut gasket pieces submitted by the supplier. Once a specific material has been approved from a sheet manufacturer, there shall be no change in its formulation or processing without re-approval from EMD. Once a gasket cutter has been approved as an EMD supplier, this supplier may furnish a variety of gaskets cut from the materials approved for this EMS.

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GENERAL INFORMATION:

This specification covers gasket materials that are best suited for use in the following environments:

Low to High Internal Pressure/Medium to High Torque flanges requiring moderate surface conformability with good torque retention in all types of engine and locomotive fluids. Typical applications: Oil & water pump mountings, covers & housing, heat exchangers, etc. NOTE: This is the most versatile gasket material available for EMD applications and can be used as a "general purpose" gasket material.

Low to Medium Internal Pressure/Medium Torque flanged joints with machined surface. Typical applications: Engine coolant conduits (both internal & external to engine).

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MAXIMUM CONTINUOUS OPERATING TEMPERATURE: 350°F
INTERMITTENT OPERATING TEMPERATURES UP TO: 650°F

This material is suitable for up to 150 psig internal pressure and for "high" torque applications (up to 150 Ft. Lbs.). It is also compatible with engine fluids. EMS 630 gasketing material is available in standard thickness from .015 through .125 inches.

DRAFTING INFORMATION:

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

MATERIAL: EMS 630 GASKET

If Anti-stick coating is required, add:

ANTI-STICK COATING BOTH SIDES

If Pressure Sensitive Adhesive is required, add:

PRESSURE SENSITIVE ADHESIVE ON SURFACE INDICATED.

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.

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