GM	WORLDWIDE ENGINEERING STANDARDS	Material Specification	GMW15176

Elastomer Seals for Fuel Caps

1 Scope

1.1 Material Description. Materials covered by this specification are divided into six (6) types.

- **Type A:** Nitrile Butadiene Rubber (NBR), sealing against the filler neck.
- **Type B:** Fluorocarbon Rubber (FKM), internal gasket.
- **Type C:** Elastomer, sealing against environmental influence.
- **Type D:** Fluorocarbon rubber, sealing against the filler neck (SAE J200 M3HK 607 A1-10B37).
- **Type E:** Fluorocarbon rubber internal gasket (SAE J200 M2HK 710 A1-10B38).
- **Type F:** Drawing defined (e.g., using SAE J200 or ASTM D2000 line callout).

1.2 Symbols. Not applicable.

1.3 Applicability. This specification covers the materials and performance of elastomeric seals, used in the screw locking or bayonet fuel cap.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

ASTM D2000	ISO 48	ISO 815-1	ISO 23529
ISO 37	ISO 188	ISO 1431-1	SAE J200

2.2 GM Standards/Specifications.

GMW3059	GMW14270	GMW14914	GMW17821

2.3 Additional References.

Drawing/Math Data File

Relevant Test Method

3 Requirements

3.1 Resources.

3.1.1 Test Samples. Unless otherwise specified, the shape, size and number of test pieces shall be in accordance with the relevant test method. Samples are finished parts or to be taken from finished parts. If not otherwise stated, mechanical properties in delivery state and after heat or fluid immersion are to be tested at +23 °C and with the same test method.

3.1.2 Conditioning. Conditioning shall be as specified in the relevant test method.

3.1.3 Equipment. Conforming to the relevant test method.

3.1.4 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.5 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to its physical definition.

3.1.6 Facilities. Conforming to the relevant test method.

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3.1.7 Deviations. Deviations from the requirements of this standard shall have been agreed upon. Such deviations shall be specified on component drawings, test certificates, reports, etc.

3.2 Material and Performance Requirements. Material and performance requirements are summarized in Table 1.

3.3 All materials supplied to this standard must comply with GMW3059, **Restricted and Reportable Substances**, including the requirement to submit a full material composition disclosure to GM via the International Material Data System (IMDS) or via a completed GMW3059 report form.

Table 1: Material and Performance Properties

Property	Test Method	Unit	Value
Hardness			
Type A	ISO 48 Method M	IRHD	70 ± 5
Type B	ISO 48 Method M (measured on cross section)	IRHD	75 ± 5
Type C	ISO 48 Method M	IRHD	75 ± 5
Type D	ISO 48 Method M	IRHD	60 ± 5
Type E	ISO 48 Method M	IRHD	70 ± 5
Type F	As specified on drawing/math data file	Shore A	As specified on drawing
Elongation at Break			
Type B	ISO 37, on complete part 500 mm/minute ± 50 mm/minute	Percent (%)	250 minimum
Type C	ISO 37, on complete part 500 mm/minute ± 50 mm/minute	%	250 minimum
Type F	As specified on drawing/math data file	%	As specified on drawing
Age Resistance (Heat Aging)			
Type A, and Type C	ISO 188 Method B, 168 h -2 h at +70 °C ± 3 °C Change of Hardness	IRHD	± 10 maximum
Type B	ISO 188 Method B, 168 h -2 h at +100 °C ± 3 °C Change of Hardness	IRHD	+10 maximum
Type D, Type E	ISO 188 Method B, 72 h -2 h at +250 °C ± 3 °C Change of Hardness	IRHD	+10 maximum
Type F	As specified on drawing/math data file		As specified on drawing
Fuel Resistance			
Type A	GMW14914, Table 1, Conventional Gasoline, 48 h -2 h at +23 °C ± 5 °C Test piece thickness 1 mm ± 0.1 mm Change of Volume (15 minutes after removal) Change of Hardness after storage in air for 48 h at +23 °C	% IRHD	+25 maximum -5 to +10

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