



Engine Coolant Hose, Non-Reinforced

1 Scope

This standard covers the material requirements of Ethylene Propylene Diene Monomer (EPDM) engine coolant hose without reinforcement, used to connect radiator with surge tank. The performance requirements are defined by additional performance specifications.

These engine coolant hoses are intended to withstand the effects of solutions containing corrosion inhibitors, and glycols and operating under low pressure conditions at continuous operating temperatures from -40 °C to maximum temperatures of +130 °C. The hoses shall be made from EPDM to meet the requirements of this specification.

1.1 Material Description. Materials covered by this standard are divided into the following types.

1.1.1 Type A. EPDM coolant hose sulphur or peroxide cured, capable of operating to a range of temperatures from -40 °C to a maximum continuous temperature limit of +100 °C, and a peak temperature of +130 °C. Hoses are not suitable for applications involving direct contact with metal fittings.

1.1.2 Type B. Drawing defined (e.g., using SAE J200 or ASTM D2000 line call out).

1.2 Symbols. Not applicable.

1.3 Typical Applications. Degassing hoses/vent hoses in the water circuit.

2 References

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

2.1 External Standards/Specifications.

ASTM D2000	ISO 188	ISO 1817	SAE J200
ASTM D2240	ISO 815	ISO 7619-1	
ISO 37	ISO 1431-1	ISO 23529	

2.2 GM Standards/Specifications.

GM9902P	GMW14329	GMW16955
GMW3059	GMW16317	

2.3 Additional References.

TMC003 Material Safety Data Sheet guidance documents (available at www.gmsupplypower.com).

3 Requirements

3.1 Resources

3.1.1 Test Samples. Unless otherwise specified, the shape and size of test pieces shall be in accordance with the relevant test procedures. Samples are finished parts or to be taken from finished parts. Where the dimensions on the finished parts do not allow preparing of test pieces, tests are to be performed on sheet material of the same production batch. The same state of cure between slabs or buttons and finished parts must be ensured by appropriate tests, which must be described in the test report. If not otherwise stated, mechanical properties in delivery state and after heat or fluid immersion are to be tested at +23 °C ± 5 °C and with the same test procedures. Unless otherwise stated, ambient temperature test conditions shall be held to +23 °C ± 5 °C. Unless otherwise stated, all other temperatures except +23 °C ± 5 °C shall be held to ±3 °C.

3.1.2 Conditioning. Conditioning shall be as specified in the relevant test procedures. The minimum time between vulcanization and testing of elastomers shall be 72 h.

3.1.3 Equipment. Conforming to the relevant test procedures.

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 specification shall be determined correctly with respect to its physical definition.

3.1.6 Facilities. Conforming to the relevant test procedures.

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

3.2 Material and Performance Requirements.

3.2.1 Design Validation Testing. Material Properties (material/compound approval) are summarized in Table 1, Material properties and Performance Requirements (construction approval) are summarized in Table 2. For full approval of a hose compliance, the requirements of Table 1 and Table 2 are needed. Six (6) samples of material shall be tested to each of the requirements for Design Validation Testing.

3.2.2 Product Validation Testing. If not defined otherwise, the following testing should be done for production audit testing:

- All tests per Table 1 except, Long Term Immersion, Ozone Resistance, Bloom and Paint Compatibility.
- Burst Strength and Fatigue Test per Table 2.

Six (6) samples of material shall be tested to each of the requirements for Production Validation Testing.

3.2.3 Audit/Inspection Testing. If not defined otherwise, the following testing should be done for production audit testing:

- All tests per Table 1 except Long Term Immersion, Ozone Resistance, Bloom and Paint Compatibility.
- Burst Strength per Table 2.

Three (3) samples of material shall be tested to each of the requirements for Audit Inspection Testing.

Table 1: Material Properties

Property	Test Procedure	Unit	Value
Hardness			
Type A	ASTM D2240, 6 mm specimens, made by plying together samples of the elastomeric compound. Read scale within 1 s, or ISO 7619-1, 6 mm specimens, made by plying together samples of the elastomeric compound. Read scale within 3 s	Shore A	55 to 75
Type B	As specified on drawing/math data file	Shore A	As specified on drawing
Elongation at Break			
Type A	ISO 37, Type 2 or Type 4 dumbbell, 200 mm/minute $\pm$ 20 mm/minute	%	200 minimum
Type B	As specified on drawing/math data file	%	As specified on drawing
Tensile Strength			
Type A	ISO 37, Type 2 or Type 4 dumbbell, 200 mm/minute $\pm$ 20 mm/minute	MPa	7.0 minimum
Type B	As specified on drawing/math data file	MPa	As specified on drawing