



Plastic Windshield Washer Hose Constructions

1 Scope

This specification covers windshield washer hose intended primarily for use as fluid lines for automotive windshield washer systems conforming to the requirements of UN 1008-2010, FMVSS 104, CMVSS 104 and SAE J942.

1.1 Material Description. Material constructions covered by this specification are divided into two (2) types; Type C and Type D.

- **Type C** hose is made of extrusion grade Polyamide 6 (PA6) per GMW16942-PA6 and used for routing hose assemblies.
- **Type D** tubing is corrugated and can be made from Polypropylene (PP), Polypropylene/Polyethylene (PP/PE) or Polyamide 6.

New materials for a new construction must be agreed to by GM Engineering prior to qualification to this requirement. Unless otherwise specified, the color shall be black and defined on the engineering drawing and/or in the math data. All type hoses are suitable for general use windshield washer solvent transport specific to the intended vehicle application.

1.1.1 Type C and Type D Tubing.

- **Type C** tubing is extruded routing hose made from Polyamide 6 per GMW16942-PA6. Routing hose is used to aid easy installation in spaces above headliners or inside spaces of other interior trim.
- **Type D** corrugated tubing use is design and application dependent.

Routing and corrugated hose shall conform to the dimensions and tolerances listed in Appendix A, Table A1 and Table A2.

1.1.2 Windshield washer fluid tubing for Ethylene Propylene Diene Monomer (EPDM) and Thermoplastic Vulcanizate (TPV) constructions are defined in GMW16503. Types A and Type B in GMW16503 are used for these definitions.

1.2 Symbols. Not applicable.

1.3 Applicability. Windshield Washer Tubing.

2 References

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

2.1 External Standards/Specifications.

ASTM D3012	ISO 1407	ISO 4577	SAE J942
CMVSS 104	ISO 1817	ISO 23529	UN 1008-2010
FMVSS 104			

2.2 GM Standards/Specifications.

9981293	GMW3059	GMW16387	GMW16504
9985670	GMW14270	GMW16503	GMW16942

2.3 Additional References.

- Component Technical Specification (CTS)
- Engineering Drawing and/or in the Math Data
- Industrial Material Specification
- Part Number Specific Document
- Relevant Drawing
- Relevant Test Procedure
- Statement of Requirements (SOR)
- Subsystem Technical Specification (SSTS)
- Test Method of Agent Extraction and Agent Material Conformation

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 procedure. Minimum six (6) test samples (hoses) are required for initial sample testing. Minimum three (3) test samples (hoses) are required for inspection testing.

Unless otherwise specified, 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 assured by appropriate tests, which must be described in the test report.

Unless otherwise stated, ambient temperature test conditions shall be held to $+23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, all other temperatures shall be held to $\pm 3\text{ }^{\circ}\text{C}$. If not otherwise stated, mechanical properties in delivery state and after heat or fluid immersion are to be tested at $+23\text{ }^{\circ}\text{C}$ and with the same test procedures.

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

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 standard 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 construction performance (i.e., construction approval) for Type C and Type D tubing, must meet all Table 1 and Table 2 requirements.

3.2.2 Product Validation Testing. Unless otherwise specified, the following testing should be done for production audit testing, see Table 2, Burst Test.

3.2.3 Audit/Inspection Testing. Unless otherwise specified, the following testing should be done for production audit testing, see Table 2, Burst Test.

3.2.4 GM Assembly Plant Specific Test Requirements. Paint-system specific testing to confirm adherence to the requirements of the Paint Staining test of Table 1 may be specified. If so, this requirement, as well as sample preparation requirements, will be referenced in the Subsystem Technical Specification (SSTS), Component Technical Specification (CTS), Statement of Requirements (SOR), math file or other part number specific document distributed as a requirement by General Motors to the supplier of the windshield washer tubing.

3.2.5 Type D Nylon Materials. As with Type C, Type D Polyamide 6 tubing materials must be GM approved or defined by an industrial material specification and agreed to by the regionally responsible GM Materials Engineer. Type D Nylon (PA) materials must meet the Caprolactam levels requirement of GMW16942 of $\leq 1.0\%$.