



## **HVAC Air Ducts**

### **1 Introduction**

**Note:** Nothing in this standard supercedes applicable laws and regulations.

**Note:** In the event of conflict between the English and domestic language, the English language shall take precedence.

**1.1 Purpose.** This specification defines the general requirements, test conditions and test methods for functional, material and static load tests for "air duct hoses" unless not described in GMW14780.

In case of conflicting requirements, the requirements described in this specification apply.

**1.2 Applicability.** Air ducts for use in the vehicle.

**1.3 Remarks.** Not applicable.

### **2 References**

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

#### **2.1 External Standards/Specifications.**

DIN EN ISO 9237

#### **2.2 GM Standards/Specifications.**

|          |          |          |          |
|----------|----------|----------|----------|
| GMW3059  | GMW14444 | GMW15058 | GMW16528 |
| GMW3232  | GMW14780 | GMW15063 | GMW16750 |
| GMW14194 | GMW14892 | GMW16426 |          |

#### **2.3 Additional References.**

- Best Practices and Knowledge Sets for IP, Console, HVAC, Human Vehicle Interface, Squeak and Rattle, and other vehicle integration areas
- Design Guidelines
- Dimension Technical Specifications (DTS)
- Statement of Requirements (SOR)

### **3 Test Preparation and Evaluation**

#### **3.1 Resources.**

**3.1.1 Facilities.** Corresponding to the respective test procedures.

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

**3.1.1.2 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 their physical definition.

**3.1.2 Equipment.** Corresponding to the respective test procedures.

**3.1.3 Test Vehicle/Test Piece.** If not otherwise specified for testing according to this specification, for initial sample approval and arbitration purpose at least ten (10) test pieces shall be delivered.

**3.1.4 Test Time.** Corresponding to the respective test procedures.

**3.1.5 Test Required Information.** Not applicable.

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**3.1.6 Personnel/Skills.** Corresponding to the respective test procedures.

**3.2 Preparation.** Corresponding to the respective Test Procedures.

**3.3 Conditions.** Corresponding to the respective Test Procedures.

**3.3.1 Environmental Conditions.** Corresponding to the respective Test Procedures.

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

**3.4 Instructions.** Not applicable.

**3.5 Data.** Not applicable.

**3.6 Safety.** This Engineering Standard may involve safety requirements for hazardous materials, the method of operations and equipment. This standard does not propose to address all the safety issues associated with its use. It is the responsibility of the user of this standard to ensure compliance with all appropriate safety and health practices. This would include any specific training that may be required. The safety and health standards include site specific rules and procedures, company rules and procedures, and Government Standards. Contact shall be made with the appropriate site Safety and Health personnel for further direction and guidance in these matters.

**3.7 Documentation.** Samples of components or material released to this standard shall be tested for conformity with the requirements of this standard and approved by the responsible GM Department prior to the start of delivery of production level components or materials.

Any change to the component or material, e.g., design, function, properties, manufacturing process and/or location of manufacture requires a new release of the product. It is the sole responsibility of the supplier to provide the customer, unsolicited, with documentation of any change or modification to the product/process, and to apply for a new release.

If not otherwise agreed to, the entire verification test shall be repeated and documented by the supplier prior to start of delivery of the modified or changed product. In some cases, a shorter test can be agreed to between the responsible GM department and the supplier.

**3.7.1 Test Results.** The results shall be compiled in a test report with reference to this specification.

## 4 Requirements and Procedure

**4.1 General Requirements.** The arrangement of the air duct hoses shall be designed in such a way that an even distribution of air and a minimum air pressure loss is achieved, to guarantee the greatest possible comfort in the interior of the vehicle.

Crosshatch or honeycomb design (approximately 5 mm x 5 mm) is mandatory on top and bottom of all HVAC ducts.

**4.1.1 Materials.** All the materials used shall correspond with the drawing specifications and the data in the releases. All the materials used shall meet GMW 14444 - Material Related Interior Part Performance.

### 4.1.1.1 HVAC Duct Material.

The following mentioned material specifications do not limit the use of other material, these specifications represent a material recommendation.

- Blow molded Polyethylene material shall meet GMW16426 (e.g., P-PE-T2 >PE-HD<).
- Polypropylene Homopolymer – Talc Filled, Heat Stabilized Material shall meet GMW16528 (e.g., P-PP-T20 >PP-T20<).

### 4.1.1.2 Foam Applied to HVAC Ducts.

- Foam applied for sealing purpose shall be according GMW15058-TYPE-A3 >PUR< and self-adhesive according GMW14892.
- Foam patches/wrap added to the duct to prevent condensate, squeak and rattle and for insulate purpose shall be according GMW15058-TYPE-A3 >PUR< and self-adhesive according GMW14892.
- Alternatives for preceding mentioned purposes are listed in GMW16750.
- Alternative foams for insulating purpose (no applicable for squeak and rattle or sealing purpose) shall be according GMW15063 Type 3. This foam shall be also self-adhesive according GMW14892.

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