



Door Water Drainage

1 Scope

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. Testing vehicle doors, with associated sealing system to the body, for water drainage.

1.2 Foreword. It is possible that a bead of variable size forms at the contact point between the door and body and traps water. When the door is opened, the water drips into the interior, onto the door paneling, or runs down the window. The aim is to prevent water dripping into the interior during rainfall or in the case of a wet vehicle, or to restrict this to within reasonable limits.

1.3 Applicability. All passenger vehicles.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14264

3 Resources

3.1 Facilities.

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

3.1.2 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.

3.1.3 Draught-free testing room.

3.1.4 Level vehicle parking surface.

3.2 Equipment.

3.2.1 Water hose with sprayer nozzle, e.g., Gardena type 1927-20 950 03/0971.

3.2.2 Clean, hard water without detergent or chemical additives, i.e., with large surface tension.

3.2.3 Protractor.

3.2.4 Device for positioning the vehicle evenly on a lateral inclination of up to 6 degrees.

3.2.5 Stop watch.

3.2.6 Video camera (preferably digital) with stand, PC image processing facility with suitable software to produce 1/25 s freeze frames.

3.3 Test Vehicle/Test Piece. Vehicle which is representative of the development status.

The vehicle shall have a painted and polished surface. The seals shall be new, i.e., with undamaged coatings.

3.4 Test Time.

Calendar time: 1 to 2 days

Test hours: 4 to 8 hours

Coordination hours: 6 to 10 hours

- Vehicle procurement
- Vehicle preparation
- Test preparation
- Video camera procurement
- Evaluation
- Creation of report

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. One (1) workshop mechanic and one development engineer.

4 Procedure

4.1 Preparation.

4.1.1 The painted surfaces and the seals shall be cleaned and dried before each test.

4.1.2 The doors shall be installed within the specified installation tolerances.

4.2 Conditions.

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4.2.1 Environmental Conditions. Unless otherwise specified, the test shall be performed at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

The test shall not be conducted under rainy or windy conditions.

The vehicle parking surface shall be level.

4.2.2 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.

4.3 Instructions. Doors and drop windows shall be closed.

4.3.1 The side roof area and door frame shall be sprayed with the hose at a distance of 1 m to 2 m for two minutes (this corresponds to a longer

period when the vehicle is stationary in the rain, whereby the water can flow e.g. behind the panel or seals etc.), until the formation of water droplets is visible (see Figure 1).

4.3.2 After a dripping period of ≈ 10 s, the door shall be opened and the dripping water shall be evaluated according to GMW14264 (see 5.2).

In the event of uncertainty regarding the amount of draining water, the test shall be recorded with the video camera and evaluated using the PC video processing facility.

4.3.3 The test shall be repeated at lateral inclinations of 1 degree, 2 degree, 3 degree and 6 degree, lifting on same side of vehicle as is being evaluated.



Figure 1: Formation of Water Droplets

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. The worst test result shall be noted for all tests.

The following rating scale serves as a guideline for assessment:

- **Rate 0:** No dripping water in the interior.

- **Rate 1:** A maximum of two drops fall into the interior or onto the seat.
- **Rate 2:** Between three and six drops fall into the interior or onto the seat.
- **Rate 3:** More than six drops fall into the interior or onto the seat.

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