



Tire Sealant Valve Stem/Tire Pressure Monitor Sensor Injection Test

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. To validate the Tire Sealant and Compressor Kit's (TSCK) ability to inject sealant through a tire valve stem/tire pressure monitor (TPM) sensor without leaving residual sealant material attached to the valve core elements that may prohibit them from opening and closing properly.

1.2 Foreword. This test was written as a standalone test and may be replaced by both the compressor, GMW15771 and sealant performance tests, GMW15806 and GMW15807.

1.3 Applicability. This procedure applies to all vehicles with Tire Sealant and Compressor Kits.

2 References

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

2.1 External Standards/Specifications.

SAE J1205

SAE J1206

2.2 GM Standards/Specifications.

GMW14586

GMW15771

GMW15806

GMW15807

2.3 Additional References.

Schrader TPM Sensor Procedures

3 Resources

3.1 Facilities. Test requires a vehicle level climate controlled chamber with a dynamometer. Test written as a full vehicle level test but may be modified into a lab test upon written authorization from GM Product Engineering (Design Responsible Engineer or equivalent).

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.

3.2 Equipment. Not applicable.

3.3 Test Vehicle/Test Piece.

3.3.1 Sealants from at least three different blended/batch dates shall be tested at various degrees of shelf life: Full life, half life, and current life.

3.3.2 Artificial Aging:

- Full life (6 years) = 65 days exposure at 70 °C
- Full life (5 years) = 55 days exposure at 70 °C
- Full life (4 years) = 45 days exposure at 70 °C
- Half life (6 years) = 32.5 days exposure at 70 °C
- Half life (5 years) = 27.5 days exposure at 70 °C
- Half life (4 years) = 22.5 days exposure at 70 °C

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3.3.3 Production released TPM sensor/valve stem shall be tested.

3.3.4 Tire shall not be punctured.

3.3.5 Product Validation (PV) level TSCK units shall be tested (or written authorization from GM Product Engineering, Design Responsible Engineer or equivalent if unavailable).

3.4 Test Time. Not applicable.

3.5 Test Required Information. See Data Sheet A1, Appendix A.

3.6 Personnel/Skills. Personnel familiar with climate controlled chamber and TSCK operation is required.

4 Procedure

4.1 Preparation.

4.1.1 The sealant shall be aged to its maximum shelf life.

4.1.2 Mark TSCK and valve stem/TPM sensor with identification number for later reference.

4.1.3 Record mass of valve stem/TPM sensor.

4.1.4 Soak TSCK and tire with mounted valve stem/TPM sensor in climate controlled chamber at the specified test temperature for ≥ 8 h.

4.2 Conditions.

4.2.1 Environmental Conditions. Entire test shall be performed at 30 °C, 23 °C and 70 °C.

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.

4.3.1 Mount test tire onto vehicle.

4.3.2 Record valve stem/TPM sensor position in terms of clock designation.

4.3.3 Record TSCK and valve stem/TPM sensor identification numbers.

4.3.4 Start the vehicle.

4.3.5 Record the auxiliary power outlet voltage.

4.3.6 Unwrap the sealant hose and electrical cord.

4.3.7 Connect the sealant hose to the tire valve stem and the power plug to the vehicle's auxiliary power outlet.

4.3.8 Simultaneously start the stop watch and power on the TSCK.

4.3.9 Inflate the test tire to placard pressure with sealant and air.

4.3.10 Turn off compressor when the TSCK pressure gage reads placard pressure and record both the dynamic/static pressure gage readings.

4.3.11 Repeat the previous step until the static TSCK pressure gage reading is at placard pressure.

4.3.12 Record total inflation time.

4.3.13 Record the tire pressure with a certified gage.

4.3.14 Drive the vehicle for 8 km (5 mi) at 88 km/h (55 mph).

4.3.15 Stop vehicle.

4.3.16 Record the tire pressure. Make a note if difficult, slow, or unable to read pressure.

4.3.17 Inflate the tire to 69 kPa (10 psi) over placard pressure using TSCK.

4.3.18 Soak tire and wheel assembly in climate controlled chamber at specified test temperature for 24 h.

4.3.19 Unwrap the air only hose and electrical cord from the TSCK.

4.3.20 Connect the air only hose to the tire valve stem/TPM sensor and the power plug to the vehicle's auxiliary power outlet.

4.3.21 Turn the selector switch to the air only position.

4.3.22 Record the tire pressure. Make a note if difficult, slow, or unable to read pressure.

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4.3.23 Record the tire pressure using a certified pressure gage. Make a note if difficult, slow, or unable to read pressure.

4.3.24 Record the TPM sensor reading if vehicle is equipped.

4.3.25 Dismount valve stem/TPM sensor and record observations.

4.3.26 Measure mass of valve stem/TPM sensor after sealant exposure.

4.3.27 Submit TPM valve/sensor to manufacturer for further analysis.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. See Component Technical Specifications (CTS) (GMW14586) for specific requirement values.

5.2.1 After TSCK usage, the tire valve shall open properly to allow the flow of air, SAE J1205/SAE J1206 and Schrader TPM sensor procedures.

5.2.2 After TSCK usage, the tire valve shall close properly and not allow the loss of air, SAE J1205/SAE J1206 and Schrader TPM sensor procedures.

5.2.3 The tire pressure shall be able to be accurately read after TSCK usage.

5.2.4 The tire shall be inflated to placard pressure within the specified time.

5.2.5 The tire pressure shall be able to be adjusted to placard pressure using the air only side of the TSCK, after driving the specified speed over the specified distance (per CTS).

5.2.6 TPM sensor shall maintain its functionality.

5.3 Test Documentation. See Data Sheet A1, Appendix A. Submit a photograph of the tire valve or sensor after testing (see Figure 1).

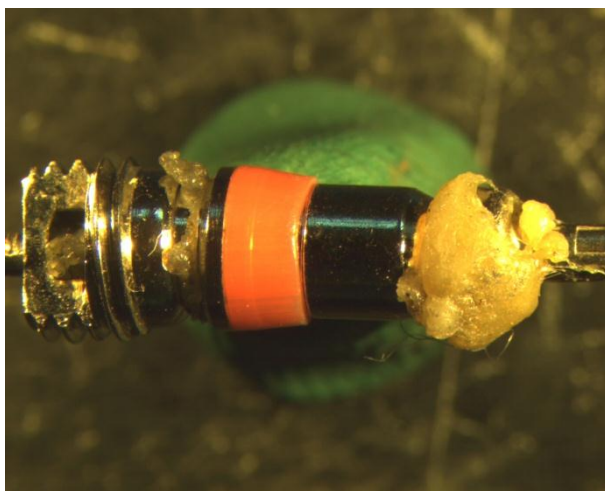


Figure 1: TPM Sensor/Stem after Testing

6 Safety

This standard may involve hazardous materials, operations, and equipment. This standard does not propose to address all the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

7 Notes

7.1 Glossary. Not applicable.

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