



## Measurement of Push Pin Retention Force for Weatherstrips

### 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 standard covers the test method for measuring the retention force of a push pin in a weatherstrip.

**1.2 Applicability.** This standard is applicable to all weatherstrip extrusions and molds that contain push pins.

### 2 References

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

#### 2.1 External Standards/Specifications.

ISO 7500-1                      ISO 9513

#### 2.2 GM Standards/Specifications.

None

### 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.

#### 3.2 Equipment.

**3.2.1 Test Machine.** Universal test machine that fulfills the following requirements: The force-measuring device of the test machine shall correspond to ISO 7500-1 Class 1; the deflection measuring device shall correspond to ISO 9513 Class 0.2. The test machine shall be such that the required test velocity can be maintained.

**3.3 Test Vehicle/Test Piece.** Finished weatherstrips or sections from weatherstrips.

**3.4 Test Time.** Reference the lab test procedures in Section 4 for timing details.

**3.5 Test Required Information.** Not applicable.

**3.6 Personnel/Skills.** Per laboratory accreditation requirements.

### 4 Procedure

**4.1 Preparation.** Cut ten (10) weatherstrip sections from finished parts. Specimens shall be approximately 50 mm in length, with push pin centered along the length of the sample. See Figure A1, Appendix A.

**4.2 Conditions.** Unless otherwise specified, the tests shall be performed at  $+23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ .

**4.2.1 Environmental Conditions.** The minimum time period between vulcanization and testing of elastomers shall be 72 h. The test piece shall remain at a temperature of  $+23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$  for at least 8 h before testing and shall be free from strain during this period.

**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** Clamp the weatherstrip section with the pin centered in the lower jaws, and the weatherstrip bulb in the upper jaws. A metal or wooden rod may be inserted into the weatherstrip bulb to aid in gripping of the specimen. See Figures A2 and A3, Appendix A.

**4.3.2** Set the force and deflection measuring equipment to zero.

**4.3.3** Apply the load at a rate of 100 mm/minute  $\pm$  10 mm/minute, until the push pin is pulled out of the weatherstrip specimen. See Figure A4, Appendix A.

**4.3.3** Record the maximum force in Newtons (N) required to remove the push pin from the weatherstrip specimen.

**4.3.4** Repeat 4.3.1 through 4.3.3 for remaining test samples.

## **5 Data**

**5.1 Calculations.** Not applicable.

**5.2 Interpretation of Results.** Record and report the maximum forces obtained during the test. See Figure A5, Appendix A.

#### **5.3 Test Documentation.**

**5.3.1** With reference to this test method, the results shall be represented in a test report. The report shall include the following:

**5.3.1.1** Complete identification of the specimen: part number, part name, program, hole size, thickness of weatherstrip base etc.

**5.3.1.2** Complete identification of the push pin: part number, color, material, etc.

**5.3.1.3** Conditioning of the test specimen, if any.

**5.3.1.4** Test conditions - temperature, humidity, etc.

**5.3.1.5** Minimum, Maximum and average forces obtained.

**5.3.1.6** Any additional observations.

## **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.

## **7 Notes**

**7.1 Glossary.** Not applicable.

#### **7.2 Acronyms, Abbreviations, and Symbols.**

**GSSLT** Global Subsystem Leadership Team

**N** Newtons

## **8 Coding System**

This standard shall be referenced in other documents, drawings, etc., as follows:

Test to GMW17859