



Test for Insertion and Sag Resistance of Weatherstrip Sealers

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 describes the test procedures used to determine the sag resistance and insertion forces for hot melt weatherstrip sealers (mastic and foamed hot melt).

1.2 Applicability. This standard is applicable to all weatherstrip mastic (e.g., 9981909) and foamed hot melt (e.g., 9985778) sealers.

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 Air-circulating oven capable of maintaining a set temperature within $\pm 3^\circ\text{C}$.

3.2.2 Test Machine. The test machine shall fulfill 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.

3.2.3 Sag Test Fixtures. See Figure A1, Appendix A.

3.2.4 Insertion Test Fixtures. See Figure A2, Appendix A. Four (4) fixtures are required.

3.2.5 Cold Chamber capable of maintaining a set temperature within $\pm 3^\circ\text{C}$.

3.3 Test Vehicle/Test Piece. Not applicable.

3.4 Test Time. Reference the lab test procedure(s) 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. Not applicable.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

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 Sag Resistance.

4.3.1.1 Heat sealer material to $+120\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$.

4.3.1.2 Insert fixture F-5095227-2 into fixture F-5095227-1 (see Appendix A, Figure A1).

4.3.1.3 Pour or dispense heated sealer material into the channel starting at the scribe line (back edge of fixture F-5095227-2) and extending approximately 150 mm. The channel is to be filled and leveled off to the top surface of fixture F-5095227-1.

4.3.1.4 Allow the fixture assembly to cool at room temperature for $24\text{ h} \pm 0.1\text{ h}$.

4.3.1.5 After cooling period, remove Fixture F-5095227-2 from the assembly.

4.3.1.6 Place fixture F-5095227-1 vertically in oven heated to $+93\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ with the unfilled portion of the channel towards the bottom. Heat sample for $1.5 \pm 0.1\text{ h}$.

4.3.1.7 Remove the fixture from the oven and record any movement of the sealer material past the scribe line.

4.3.2 Insertion Force.

4.3.2.1 Heat sealer material to $+120\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$.

4.3.2.2 Pour or dispense heated sealer material into the full length and flush to the surface of fixture F-5095228.

4.3.2.3 Repeat for three (3) additional test fixtures.

4.3.2.4 Let fixtures cool at room temperature for a minimum of 1 h.

4.3.2.5 After cooling period, place one sample in each of the following environments for $24\text{ h} \pm 0.1\text{ h}$:

- $-18\text{ }^{\circ}\text{C}$
- $+5\text{ }^{\circ}\text{C}$
- $+21\text{ }^{\circ}\text{C}$
- $+38\text{ }^{\circ}\text{C}$

4.3.2.6 Insert an aluminum, non-coated, non-painted blade (F-5095243, see Appendix A, Figure A2) into the test machine.

4.3.2.7 Secure test fixture F-5095228 into test machine base. Insert blade F-5095243 into each sample at a speed of $50\text{ mm/minute} \pm 5\text{ mm/minute}$ to a depth of 3 mm.

4.3.2.8 Record the insertion forces.

4.3.2.9 Insertion test must be performed within 1 minute of removal from test environment.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results.

5.3 Test Documentation. With reference to this test procedure, the results shall be represented in a test report. The test report shall include the following:

- Complete identification of the specimen.
- Conditioning of the test specimen.
- Test conditions.
- Any deviations to the test procedure.
- Measurement of sealer movement past scribe line for sag resistance.
- Insert values for each sample at the specified temperatures.