



Storage Stability of Adhesives and 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 specification prescribes the procedures to be used to investigate the changes in physical or mechanical properties of adhesives and sealers when subjected to extended storage periods in uncontrolled environments.

1.2 Applicability. This test procedure is applicable when referenced in the appropriate material specification.

1.3 Remarks. This test procedure attempts to simulate the environmental extremes that adhesives and sealers normally experience during shipping and storage. The environmental parameters used for testing may be modified by GM Materials Engineering as required due to unusual or non-typical situations.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3221 GMW14729

2.3 Additional References. None.

3 Resources

3.1 Facilities. GM assembly facilities where adhesives and sealers are used.

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 Quantity of empty 0.25 L test cans.

3.2.2 Air-circulating oven capable of providing a sustained temperature of up to 54 °C.

3.2.3 Cold box or freezer capable of providing a sustained temperature of -30 °C.

Note: All metal temperature shall be controlled within ± 2 °C.

3.3 Test Vehicle/Test Piece. Bulk or preformed adhesive or sealer material.

3.4 Test Time. As prescribed for each specific test in Section 4.

3.5 Test Required Information. See 5.3.

3.6 Personnel/Skills. Trained laboratory technician or test engineer.

4 Procedure

4.1 Preparation.

4.1.1 Bulk Materials. The 0.25 L test containers are filled with the materials to be tested and are sealed by pressing the lid down firmly. The use of an auxiliary seal, such as sealing wax, is permissible.

4.1.2 Preformed Materials. Preformed materials are tested in their original containers where practical. Where not practical, prepare samples according to 4.1.1.

4.1.3 Moisture Protection. When testing moisture sensitive materials, an anhydrous nitrogen blanket may be required prior to sealing the testing containers as recommended by the respective material source.

4.1.4 Number of Test Samples. The number of test samples is determined based on the amount of post-exposure testing required in the appropriate material specification.

4.2 Conditions.

4.2.1 Environmental Conditions. All testing in standard conditions to this specification shall be performed in accordance with GMW3221 Code A, Procedure for Standard Conditions of Organic Materials.

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 Shipping Stability.

4.3.1.1 Elevated Temperature Stability.

4.3.1.1.1 The test sample is placed in an air-circulating oven for 72 h at 54 °C, or as otherwise specified in the material specification or by the responsible GM engineer.

4.3.1.1.2 The sample is then removed from the oven and allowed to return to 22 °C and tested as required by the applicable material specification.

4.3.1.2 Low Temperature Stability.

4.3.1.2.1 The test sample is subjected to three (3) test cycles as defined in Table 1, unless otherwise specified in the material specification or by the responsible GM engineer. If no cycle is specified, use Cycle A. For materials that require freeze-protection during shipment, use Cycle B.

Table 1: Low Temperature Stability Cycle

Cycle A	Cycle B
17 h at -29 °C 7 h at +25 °C	17 h at +4 °C 7 h at +25 °C

4.3.1.2.2 The test material is then returned to 22 °C and tested as required by the applicable material specification.

4.3.1.3 Humidity Stability.

4.3.1.3.1 The test sample is subjected to 96 h of humidity according to GMW14729, Option A or B, unless otherwise specified in the material specification or by the responsible GM engineer.

4.3.1.3.2 The test sample is then returned to 22 °C and tested as required by the applicable material specification.

4.3.2 Storage Stability.

4.3.2.1 Store the samples in an air-circulating oven, or incubator at 35 °C unless otherwise specified in the applicable material specification or by the responsible GM engineer.

4.3.2.2 Remove the samples at 30 day, 60 day and 90 day intervals, or as directed in the material specification, or by the responsible GM Material Engineer. Cool to 22 °C and test as required in the material specification.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Not applicable.