



Standard Conditioning of Organic Materials

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 document describes the general procedure to be used for standard conditioning of organic materials. The conditioning of these materials at standard temperature and humidity conditions will aid in obtaining repeatable and comparable test results.

1.2 Applicability. This standard applies to automotive organic materials, test laboratories, and testing chambers.

2 References

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

2.1 External Standards/Specifications.

None

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 Conditioning Environment Temperature Controlling Equipment. Heating and/or cooling equipment with air circulation capable of maintaining an environment at a temperature of $+22\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$.

3.2.2 Conditioning Environment Humidity Controlling Equipment. Humidifying equipment, if required, with the ability of maintaining an environment at the relative humidity (RH) requirements based on the following coding:

- Code A 50% $\pm$ 5% RH
- Code B 50% $\pm$ 10% RH
- Code C 65% $\pm$ 10% RH
- Code D No RH control or measurement

The appropriate code shall be referenced in the applicable Material Specification or Test Procedure. The Material Specification supercedes Test Procedures if there is disagreement between the Material Specification and a Test Procedure.

3.2.3 Chamber Temperature Controlling Equipment. Air circulating oven or suitable apparatus to control environment temperature for drying of materials which require drying.

3.3 Test Vehicle/Test Piece. Organic materials, e.g., polyamides, polyurethanes, wool, cotton, fiberboard, etc.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Organic material test specimens are maintained in an environment at a specified temperature and relative humidity for a specific period to achieve a state of equilibrium immediately prior to conducting certain tests. This will aid in obtaining test results that are repeatable and comparable.

3.6 Personnel/Skills. Personnel trained in accordance with laboratory accreditation requirements.

4 Procedure

4.1 Preparation.

4.1.1 Pre-dry materials with hygroscopic characteristics such as polyamides, polyurethanes, wool, cotton fiberboard, etc., as described in the Material Specification, if required, until an approximately constant weight is achieved.

4.1.2 All other materials do not require pre-drying.

4.2 Conditions.

4.2.1 Environmental Conditions. Condition organic material test specimens for at least 24 h in an environment having a temperature of $+22\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ and a relative humidity as specified by the appropriate code (see 3.2.2), referenced in the applicable Material Specification or Test Procedure.

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. Test specimens or material samples to be used to produce test specimens shall be positioned in the conditioning environment such that, wherever possible, all material faces are exposed to the conditioning atmosphere. It is preferable that small samples/specimens shall be freely suspended in the area, and that larger samples/specimens be supported on a wire rack. If a conditioning cabinet is used, samples shall also be evenly distributed inside the cabinet. During the conditioning period, frequent disturbance of the conditioning environment shall be avoided. Testing shall be conducted in the conditioned environment or immediately (≤ 5 minutes) after removal from the conditioned environment.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Not applicable.

5.3 Test Documentation. Temperature and humidity plots versus time for all sample conditioning periods.

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.

7.2 Acronyms, Abbreviations, and Symbols.

RH Relative Humidity

8 Coding System

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

Test to GMW3221

Example: Condition test specimen for 24 h to the requirements of GMW3221, Code A

Where:

GMW = Validation Area (GM Worldwide)

3221 = Procedure Number

Code A = Relative Humidity Code (see 3.2.2)

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Page 2 of 3