



Procedure for Determining the Staining of Trim Materials Due to Sulfur Dioxide, SO₂, and Hydrogen Sulfide, H₂S

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 defines the standards to be adopted for determining the resistance to staining of trim material due to sulfur dioxide and hydrogen sulfide.

1.2 Applicability. All trim materials which may contain additives sensitive to environments containing sulfur dioxide or hydrogen sulfide. This may include, but is not limited to plastic roll goods, leathers and some plastics.

1.3 Remarks. None.

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

2.3 Additional References. None.

3 Resources

3.1 Facilities. Not applicable.

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 Burette, pipette, separator funnel, volumetric flasks, analytical balance, dropper or apparatus which provide test solution dripping (four (4) units).

3.2.2 Absorbing paper.

3.2.3 Chronometer or watch.

3.2.4 Cutting die or scissors for test specimen preparation.

3.2.5 Saturated Sodium Sulfite Solution. Prepare the solution by adding 30 g (minimum) of Sodium Sulfite (Na₂SO₃), to 100 mL of distilled water. The presence of salt crystals indicates a saturated solution.

3.2.6 Dilute Sulfuric Acid Solution. Prepare the solution by adding 25 mL of concentrated (96%) Sulfuric Acid (H₂SO₄), to 75 mL of distilled water. Add the acid to the water very slowly along the edge of the vessel. Do not stir. Allow the solution to cool before handling the container without gloves.

3.2.7 Use a 1% solution of Hydrochloric Acid (HCl).

3.2.8 Potassium Sulfide Solution. Prepare the solution by adding 1.0 g ± 0.1 g of Potassium Sulfide (K₂S), to 100 mL of distilled water.

3.3 Test Vehicle/Test Piece. Test specimen shall be taken from available material, production yardage, hides or plaques.

3.4 Test Time.

Calendar time: 2 days

Test time: 1 hour

Coordination time: 24 hours

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Personnel trained in accordance with the laboratory accreditation and Standard Operating Procedure requirements.

4 Procedure

4.1 Preparation.

4.1.1 Cut two (2) specimens, one (1) for each solution (see 4.3.1 and 4.3.2).

4.1.2 Cut both test specimens to approximately 100 mm × 100 mm.

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 Staining Due to Sulfur Dioxide (SO₂).

4.3.1.1 Apply one (1) drop of sodium sulfide solution (see 3.2.5) on the test specimen surface by using a dropper, pipette or similar device.

4.3.1.2 With another dropper (or pipette, etc.), add one (1) drop of H₂SO₄ solution over the drop of Na₂SO₃.

4.3.1.3 Allow solution to remain on sample for 25 minutes.

4.3.1.4 Dry the test specimen surface using absorbing paper.

4.3.2 Staining Due to Hydrogen Sulfide (H₂S).

4.3.2.1 Apply one (1) drop of HCl solution on the test specimen surface by using a dropper, pipette or similar device.

4.3.2.2 With another dropper (or pipette, etc.), add one (1) drop of K₂S solution over the drop of HCl.

4.3.2.3 Allow solution to remain on sample for 10 s.

4.3.2.4 Dry the test specimen surface using absorbing paper.

4.3.3 For both tests, after having removed the solutions, the test specimens shall be evaluated for color changes and other deleterious effects.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Evaluate for color changes and other deleterious effects in accordance with the applicable material specification for the specimen being tested.

5.3 Test Documentation. Document in accordance with the applicable material specification for the specimen being tested.

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