



Color Read – Through of Automotive Fabrics

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 test standard is used to assess the ability to see through automotive textile materials.

1.2 Applicability. This procedure applies to automotive fabrics.

2 References

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

2.1 External Standards/Specifications.

ISO 105/A02

2.2 GM Standards/Specifications.

GMW3221

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 Color Machine. Spectrophotometer capable of CIELAB measurements with a 10 degree standard observer, a D65 or C standard illuminate, and an orifice size between 10 mm and 30 mm. The acceptable machine geometries are 45 degree/normal (45/0), normal/45 degree (0/45), diffused/normal (d/0), or normal/diffused 0/d. If a diffuse geometry instrument is used, the specular component of reflectance shall be excluded from the measurement. The angle between the sample normal and the illuminating beam in 0/d geometry, and the angle between the sample normal and the viewing beam in d/0 geometry, shall not exceed 10 degrees.

Note: Normally, the larger the orifice size, the better. However, in cases where the test specimen has a large pattern, select an orifice size which allows the taking of readings over all colors of the pattern.

3.2.2 Cutting dies or shears for preparation of test specimens.

3.2.3 Apparatus for conditioning to the appropriate requirements as described in GMW3221 – Code A, unless otherwise specified in the relevant materials specification.

3.3 Test Vehicle/Test Piece.

3.3.1 Black and White Standard Backings. The white standard backing, when measured using the equipment specified in 3.2.1 with the specular component excluded, shall have an L value > 90 where L = Luminosity. The black standard backing, when measured in the same way, shall have an L value of < 20. The size of these standard backings must be larger than the orifice being used.

3.4 Test Time.

Calendar time: 2 days
Test hours: 1 hours
Coordination hours: 0 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 At least one (1) test specimen, 100 mm ± 5 mm × 100 mm ± 5 mm shall be prepared.

Note: Specimen size is not critical providing measurement can be properly taken.

4.1.2 Unless otherwise specified in the relevant material specification, conditioning shall be performed according to GMW3221 – Code A.

4.2 Conditions.

4.2.1 Environmental Conditions.

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 Place the show surface of the test specimen over the orifice.

4.3.2 Place the white standard backing over the test orifice and on top of the test specimen and read the L value.

Note: Be sure that there is no space between the test specimen and the standard backing when measuring.

4.3.3 Without moving the test specimen, place the black standard backing over the orifice and read the L value again.

Note: Be sure that there is no space between the test specimen and the standard backing when measuring.

4.3.4 Repeat 4.3.1 through 4.3.3 as many times as necessary to achieve an accurate representation of the material's pattern.

4.3.5 Visually compare the fabric over each of the standards (black standard and white standard) to ISO 105/A02.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Visually compare the fabric over each of the standards (black standard and white standard) to ISO SO 105/A02. The minimum acceptable value is 4.5.

5.3 Test Documentation.

5.3.1 Report the largest difference (dL) found as a result of the difference in the measurements obtained in 4.3.2, 4.3.3, and 4.3.4. If there is a pattern in the fabric, describe the area tested which yielded that result.

5.3.2 Report the most equivalent ISO 105/A02 Gray scale value as observed in 4.3.5.

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.