



Fiber Coating - Interior

1 Scope

This specification covers the finish durability requirement for decorative and/or functional interior parts which are fiber coated with pre-dyed fibers and routine quality control for fiber coated automobile components.

1.1 Material Description. The fibers are generally nylon or polyester. The substrates are generally polypropylene, acrylonitrile butadiene styrene (ABS), polycarbonate, painted metal. The adhesive used for the application of the fibers to the substrate shall be approximately the same color as the fiber or clear, must be resistant to heat, light, humidity, etc., and shall not cause staining of the fiber coating or adjacent materials. The appearance of substrate may be reviewed by related team.

1.2 Symbols. The code defines the material construction and will be assigned by the responsible department.

1.3 Applicability. Suitable for instrument panel (IP) storage, console box, etc.

1.4 Remarks. All materials covered by this specification are subject to part performance testing through part validation including GMW14444.

2 References

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

2.1 External Standards/Specifications.

ISO 105-A02	ISO 105-X12	ISO 8510-2	ISO/IEC 17025
ISO 105-A03			

2.2 GM Standards/Specifications.

GMW3059	GMW3232	GMW6992	GMW14444
GMW3116	GMW3235	GMW14102	GMW15634
GMW3205	GMW3259	GMW14124	GMW15635
GMW3208	GMW3402	GMW14270	GMW16853
GMW3221	GMW3417		

2.3 Additional References.

- CS-10 Taber abrasion wheels, available from www.taberindustries.com/taber-abrading-wheels
- Naphtha, CAS No. 6472-49-0, available from www.essentialhardware.com

3 Requirements

3.1 Requirements on Test Specimens. All test specimens shall be conditioned to GMW3221, Code A for a minimum of 24 h, unless the test method indicates that standard conditioning is not required or that other conditions apply.

3.2 Test Data. Lab testing shall be performed by a laboratory that conforms (meets requirements but may not be formally recognized by a 3rd party) to ISO/IEC 17025 and is acceptable to the responsible GM department. Supplier shall submit a letter of compliance.

3.3 Sampling and Test Specimen Preparation. Prepare test specimen as required in the respective test method.

3.4 Data Reporting. If all individual readings of a specific test meet or exceed the specified requirements, report the average. Unless otherwise stated, any individual reading outside the specified limit does not meet the requirement. Report all individual test results that do not meet the requirements.

3.5 Visual Evaluation of Automotive Trim. (GMW6992). The color, pattern, aesthetics and other related qualities shall be evaluated and approved by the responsible engineering department as an acceptable match to the engineering approval sample when viewed under conditions set forth in GMW6992.

There shall be no appreciable dust out (fiber loss), and the fiber coating shall be of uniform density covering the total area as shown on the engineering drawing. The density and upright position of the fibers shall be equivalent to the approved sample.

3.6 Deviation from Defined Test Methods. Deviations from the conditions of any test method shall be agreed upon between supplier and vehicle manufacturer. All deviations shall be specified on the component drawings, and Statement of Requirements and shall be indicated as such on test reports.

3.7 Documentation. Samples of components or material released to this specification shall be tested for conformity with the requirements of this specification and approved by the responsible GM Department prior to the start of delivery of production level components or materials.

3.7.1 Any change to the component or material, e.g., design, function, properties, manufacturing process and/or location of manufacture requires a new release of the product. It is the sole responsibility of the supplier to provide the customer, unsolicited, with documentation of any change or modification to the product/process, and to apply for a new release.

3.7.2 If not otherwise agreed to, the entire verification test shall be repeated and documented by the supplier prior to start of delivery of the modified or changed product. In some cases, a shorter test can be agreed to between the responsible GM Department and the supplier.

3.8. Requirements. The following requirements describe the testing to be completed for each part. Any test method that does not fit the standard test setup may be surrogated to plaque data with the same substrate, adhesive, and process.

3.8.1 Knife Peel Test (ISO 8510-2). Minimum 12 N/2.5 cm, peel back rate 250 mm/minute. Applicable only to fiber coating applied by tape adhesive.

3.8.1.1 As Received. Test three (3) specimens in as received condition.

3.8.1.2 After Humidity. Test three (3) specimens after 24 h pre-conditioning at 38 ± 2 °C and $95 \pm 5\%$ relative humidity (RH) within 10 minutes of removal from the humidity.

3.8.1.3 After Solvent Exposure. Test three (3) specimens. Briefly soak the cotton rubbing cloth in (Naphtha, CAS No. 64742-49-0, or similar) and wring out the excess. Place the cotton rubbing cloth over the test specimen and allow it to remain there for 5 minutes. Remove the cotton rubbing cloth and immediately test the specimen.

3.8.2 Abrasion Resistance (GMW3208). CS-10 Taber abrasion wheels. A rating of 6 or greater is required after 300 cycles with 500 g weight.

3.8.3 Water Spotting (GMW14102). Specimen size shall be 200 mm × 200 mm. Amount of water used shall be 5.0 ml. Perform the water spotting procedure three (3) times on the same area, allowing the specimen to dry for at least 24 h after each application of water. Evaluate after each drying process and report the most noticeable results. No staining, ring formation or haptic change is allowed. If the water wicks to the edge, increase the specimen size.

3.8.4 Color Crock (ISO 105-X12). The crocking cloth shall have a minimum rating of 4 wet and 4 dry (per ISO 105-A03) as received and after aging (exposure to 70 °C for seven days). Record the results.

3.8.5 Odor (GMW3205). For test setup and requirements, details on test temperature and ratio, see GMW16853, Table 4.

3.8.6 Flammability (GMW3232).

Note: If material is a composite (as defined in the test procedure) or is to be used in composite, the composite must meet the requirement(s) detailed in GMW3232.

3.8.6.1 After Conditioning. Immediately prior to flammability testing, all test specimens shall be conditioned for a minimum of 24 h according to GMW3221-A.