



COATING, WEATHERABLE, ABRASION RESISTANT FOR POLYCARBONATE GLAZING APPLICATION

WSS-M99P44-A

1. SCOPE

This specification defines the performance of a UV stabilized weatherable coating for polycarbonate.

2. APPLICATION

This specification was released to define coating performance of a weatherable, abrasion resistant silicone hardcoat/PECVD (Plasma Enhanced Chemical Vapor Deposition) system for polycarbonate glazing applications. Typical application includes: rear quarter windows, panoramic roof windows, backlite, and moon roofs.

3. REQUIREMENTS

Material Specification requirements are to be used for initial qualification of materials. All parts must also meet the appropriate DVP & R and Subsystem Design Specification requirements.

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements for Production Materials (WSS-M99P1111-A).

3.2 SYSTEM COMPONENTS

3.2.1 Substrate Condition

The polycarbonate substrate surface to be coated must be cleaned to ensure the absence of oil or alkaline residues, fingerprints, corrosion, mold release agents, dirt, moisture, and other foreign materials.

3.2.2 System Requirements

Material specifications are to be used for initial qualification of materials. A Control Plan for ongoing production verification is required. Appropriate statistical tools are recommended to be used to analyze process/product data and to assure consistent processing of the materials.

3.2.3 Test Plaques

Testing must be conducted on plaques from a production representative process.

Test specimens should be 3.5 - 6.0 mm thick, glazing grade, polycarbonate specimens with sizes appropriate for specific test method.

Date	Action	Revisions
2008 02 08	Activated	J.Robincheck, M. Melandru, C. Ridgard



3.2.4 Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5% relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

3.3 APPEARANCE: COLOR, FINISH, SURFACE

3.3.1 Color, Gloss and Clarity

Shall match the Master Approved Sample color panel or the initial sample as approved by Design Center.

3.3.2 Haze

As specified in regulatory requirements ANSI Z26.1. (Test method is specified in Test Number 17 and 18.)

3.3.3 Aged Appearance (ASTM D 2616, gray scale)

The material shall exhibit a Rating 3 or better (AATCC Evaluation Procedure 1) after exposure to the environments listed in paragraphs 3.4.3, 3.4.4, 3.4.5, 3.4.6, and 3.4.10.

3.3.4 Opacity (For blacked out areas outside of the "Day Light Opening")

Total visible light transmission through the coating shall not exceed 1.0%. The measurement shall be made using a transmission black and white densitometer (e.g. "Tobias Model TBX"), or equivalent in direct contact with the coating surface.

3.3.5 Coating Thickness (ASTM B 487, PELT, or equivalent)

Coating thickness must be sufficient to meet all requirements of this specification and defined on the engineering drawing. Refer to mutually agreed upon control plan.

3.3.6 General

The coating shall be cured to a presentable film showing no craters, pinholes, seediness, abnormal roughness or other defects as referenced in WSS-M28P1-B6/B7.



3.4 RESISTANCE PROPERTIES

3.4.1 Abrasion Resistance

Test Number 17 or 18 of latest released ANSI Z26.1, in accordance with ASTM D 1044-05. Test number 17 or 18 should be selected based on ANSI Z26.1 application definition.

Minimum performance level allowed is less than a 10% change from original haze after 500 cycles. In addition, the coating must meet the performance level required for the class of glazing listed on the part drawing and with the level of performance mandated by ANSI Z26.1.

3.4.2 Coating Adhesion, max (FLTM BI 106-01, Method B, carbide tip scribe only) Grade 2

3.4.3 Water Resistance (FLTM BI 104-01, 240 h)

No blistering, dulling, softening, loss of adhesion, and/or any other film failure.

After exposure, adhesion testing performance must be met per Para. 3.4.2 within 20 minutes after removal from water.

3.4.4 Heat Aging Resistance, min Rating 4 (90 +/- 2 °C, 240 hours, AATCC Evaluation Procedure 1)

After exposure, adhesion testing performance must be met per Para 3.4.2.

3.4.5 Humidity Resistance (98% relative humidity, 38 +/- 2 °C, 240 hours)

No blistering, dulling, softening, and/or loss of adhesion.

After exposure, adhesion testing performance must be met per Para 3.4.2.

3.4.6 Fluid Spotting Resistance, min Rating 4 (FLTM BI 168-01, Method A, AATCC Evaluation Procedure 1)

Test Fluids: (As identified in method under, "Body and Exterior Trim use")

No dulling, surface distortion or permanent softening permitted.

After exposure, adhesion testing performance must be met per Para 3.4.2.