



PAINT PERFORMANCE, RIGID SUBSTRATES, EXTERIOR

WSS-M2P180-C

1. SCOPE

This specification defines the performance of a multi-layered paint system required for all exterior rigid body sheet metal and all exterior rigid body parts where best appearance and highest durability are required. This system is specified for component suppliers covering all processes including in-department and pre-delivery repairs.

2. APPLICATION

This specification was released to define paint performance of exterior parts visible after assembly and is applicable to all surfaces outboard of the weatherstrip.

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.

Terminating exterior edges visible after assembly shall conform to the full requirements of this specification.

Any localized post mold operations (Flame Treating, Sanding,) prior to painting requires the additional testing as noted in the last column of Table 1.

In-department, pre-delivery and refinish paint repairs shall meet the requirements of this specification.

Parts must conform to the color requirements defined by the Ford Color Harmony Team or equivalent. Body color components shall visually match the adjacent body region for orange-peel and waviness. Instrumental measurements such as Wavescan or QMS may be used as a guide if measurement is feasible. Refer to the appearance requirements of the adjacent body region.

Note: For in process color check the preferred method is SAE J1545, three angle CMC (Color Measurement Committee).

Effective for 2007 model year and beyond, all paint applicators must meet the Exterior Parts Painter Approval Process (AVP-T113-015) unless waived by Materials Engineering.

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 Substrates

Auto body steel, aluminum, pre-coated or electroplated zinc or zinc alloy coated steel and zinc die casting or as specified on Engineering Documents.

Rigid polymers and rigid polymer blends, SMC, ABS, PC/ABS,

Date	Action	Revisions
2008 10 15	Revised	See Summary of Revisions for details Global Paint Team
2007 12 18	Revised	Note 2 in Table 1 J. Crist
2007 10 29	Activated	J. Crist



3.2.2 Substrate Condition

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

3.2.3 Paint System Requirements

Substrate *	Pre-treat	Prime	Topcoat*
Cold rolled steel Precoated steel Electroplate zinc Zn alloy coated steel Aluminum	As Needed to meet process/performance requirements (i.e. Zinc Phosphate or equivalent)	Cathodic Electrocoat(Note 2) Primer/Surfacer or equivalent	Basecoat/Clearcoat, Monocoats, Powder Coat (Note 3)
Thermoset Polymers SMC, BMC, DMC, etc.	As applicable to meet Process/Performance Specifications	Primer/Surfacer	Basecoat/Clearcoat, Monocoats
Thermoplastic Polymers	As applicable to meet Process/Performance Specifications	Primer, Surfacer As applicable to meet Process/Performance Specifications	Basecoat/Clearcoat, Monocoats
ABS, PC/ABS PA, PA/PPE, etc.	As applicable to meet Process/Performance Specifications	Primer, Surfacer As applicable to meet Process/Performance Specifications	Basecoat/Clearcoat, Monocoats

Specified Film Thickness:
(Note 1)

E-coat	20-23 µm
Primer/Surfacer	17-24 µm
Monocoat	25-35 µm
Basecoat/Clearcoat	15-30 µm /38-50 µm
Powdercoat	50-100 µm

* - Ford Materials Engineering approved materials (Approved Source List)

Note 1: These ranges are considered to be requirements unless otherwise supported by testing data agreed to by Materials Engineering.

Note 2: Primer must be applied over cathodic e-coat for paint system robustness.

Note 3: For Powder coatings, Pretreatment & Cathodic E-coat must be used. Zn phosphate is the preferred pretreatment any alternative must be approved by Materials Engineering.

Zinc phosphate coating per WSS-M3P1-D shall be used if steel and aluminum parts are processed concurrently and the aluminum tolerance of the process used shall not be exceeded. Dual phase Zinc phosphate may also be used where production aluminum content exceeds 7%.

Control plan must specify if adhesion promoter, and/or anti-chip primer surfacer are required to meet the requirements of this specification.



3.2.4 Repairs, In-Department and Pre-delivery

Repaired areas must meet the requirements of this specification. All repair materials and processes used should be approved by the affected Product Materials Activity. Maximum film thickness and/or number of repairs for repaired parts will be specified in the mutually agreed control plan and conform to Para 3.3. All repairs must be with the identical color to the original finish unless approved by Materials Engineering

3.2.5 Finished Parts

Testing must be conducted on actual production parts. Where part dimensions limit equipment access, representative panels run through the production processes may be substituted for production parts. If regrind is used, testing at the maximum loading level is required and must meet the specification requirement.

These panels shall be processed together with parts and shall be representative of the parts with respect to substrate, phosphate coating, primer thickness, sanding, enamel thickness, and processing.

When panels are used as a substitute, this must be clearly reported on the PSW or the laboratory test report.

3.2.6 Aging

Test specimens prepared for investigations according to this specification must be aged at least 72 hours at 23 +/- 2 °C (preferred) or 16 hours at 45 +/- 1 °C prior to testing.

3.2.7 Process/Product Validation Test Requirements as listed in Table 1. This table is for only Approved paint technologies as shown on Ford Approved Source List otherwise full WSS-M2P180-C specification testing is required.

Design Verification Testing (DV) is done on plaques by the paint supplier and is covered in the applicable paint material specification.

Product/Process Validation Testing (PV) is done on production painted parts as defined in Table 1.

3.3 FILM PROPERTIES

3.3.1 Color (FLTM BI 109-01 Visual Assessment, SAE J1545, Three-Angle CMC)

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