



PERFORMANCE, LAMINATED IN-COLOR FILM MATERIALS, CLASS "A" SURFACE, EXTERIOR

WSS-M99P37-B

1. SCOPE

This specification defines the performance of multi-layered film materials for all exterior body parts where best appearance and high durability are required. This system is specified for assembly plants and component suppliers covering all processes including in-department and pre-delivery repairs.

2. APPLICATION

This specification was released originally to define film laminate performance of exterior surfaces. This specification is applicable to all surfaces outboard of the weatherstrip that require a class "A" finish.

3. REQUIREMENTS

Testing to this specification shall be performed in conjunction with the appropriate laminate material specification.

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

In-department and pre-delivery repairs shall meet the requirement 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).

3.1 APPROVED SOURCES

This specification is performance based and does not have approved sources.

3.2 SYSTEM COMPONENTS

3.2.1 Substrates

Rigid polymers and rigid polymer blends, SMC, ABS, etc.

Flexible polymers and flexible polymer blends, PU, PC, TEO, etc.

Date	Action	Revisions	Rev. 02
2016 11 17	Revised	See Summary of Revisions	G. Eaton, NA
2016 02 09	Revised	Corrected paragraph number errors.	G. Eaton, NA
2014 10 22	Released		G. Eaton, NA



3.2.2 In-Department and Pre-delivery Repairs

Repaired areas must meet the requirements of this specification. All repair materials and processes used should be approved by the affected Product Materials activity. Number of repairs for repaired parts will be specified in the mutually agreed control plan. All repairs must be in a complimentary color to the original finish by agreement with the receiving company.

3.2.3 Finished Parts

Testing must be conducted on actual production parts. Parts made of flexible substrates, defined in para. 3.2.1, must contain the amount of regrind that is stipulated in the mutually agreed upon Control Plan. Panels of flexible substrates, with the appropriate regrind content, can be laboratory prepared (simulating production conditions) and used for long term weathering exposure, such as Florida and Arizona submissions.

Test specimens should be cut from production representative parts when possible. Where part dimensions limit equipment access and testing, and/or part geometry or size is such that adequate test specimens cannot be obtained, or when production parts will not be available to support timing (e.g. long term weathering), representative panels (plaques) run through the production process may be substituted for production part specimens.

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.

3.3.2 Gloss Report (FLTM BI 110-01, ASTM D523)

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

Gloss	A:	20° Glossmeter	min 92
	B:	60° Glossmeter	76 - 84
	C:	60° Glossmeter	66 - 74
	D:	60° Glossmeter	58 - 66
	E:	60° Glossmeter	47 - 53
	F:	60° Glossmeter	33 - 38
	G:	60° Glossmeter	17 - 23
	H:	60° Glossmeter	7 - 13
	J:	60° Glossmeter	4 - 6
	K:	60° Glossmeter	2 - 4
	L:	60° Glossmeter	0.5 - 2.0
	N:	60° Glossmeter	1.8 - 2.4
	R:	60° Glossmeter	1.2 - 1.6

3.3.3 Appearance

Color, gloss and surface finish shall match the Master Appearance Sample or the initial sample approved by Design Center.



3.3.4 Visual Evaluation

The finished parts shall show no evidence of blisters or delamination.

Material shall meet the appropriate Film Laminate Appearance Standard.

3.3.5 Handling

Shall withstand normal handling without damage.

3.3.6 Adhesion

Grade 2 max

(FLTM BI 106-01, Method D, knife blade)

All areas of the component visible after assembly must be evaluated/tested, including flanges, parting lines, areas subject to post-mould treatment, styling lines and grooves.

Lightly hand sand paint film surface (10 double rubs, moderate pressure) with P600 paper until dull, before scribe operation and checking adhesion.

3.3.7 Thickness of Layers

Report Values

(FLTM BI 117-01 Metallic Substrates, PELT or equivalent,
ASTM B487, Non-Metallic Substrates, PELT or equivalent)

All areas of the component visible after assembly must be evaluated/tested, including flanges, parting lines, styling lines and grooves. Measurements must be taken on all layers except substrate.

3.4 RESISTANCE PROPERTIES

3.4.1 Water Resistance

(FLTM BI 104-01, 240 h, scribe per 3.3.6)

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

Adhesion shall be tested according to para. 3.3.6 within 30 minutes after removal from water.

3.4.2 Condensing Humidity Resistance

Rating 4-5 min

(FLTM BI 104-02, Method A, 240 h
AATCC Evaluation Procedure 1/ISO 105-A02)

Alternative Methods (Use must be agreed upon by Materials Engineering)

3.4.2.1 Humidity Resistance 168 h at 85 °C and 90% R.H.

Rating 4-5 min

3.4.2.2 Humidity Resistance 240 h at 85 °C and 90% R.H.

Report

After exposure: Adhesion shall meet the requirements of para. 3.3.6