GM	WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW17199

Fume Yellowing of Topcoat from Cathodic Electrodeposition (ELPO)

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 procedure is used to evaluate the level of topcoat fume yellowing caused from cathodic ELPO.

1.2 Applicability. This test method is applicable for all the Elpo paint which is approved under GMW3008.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3008

2.3 Additional References. None.

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.

3.1.2.1 Alternative test facilities and equipment may also be used by prior agreement between the materials engineer and the supplier.

3.2 Equipment.

3.2.1 Two 0.24 L tin cans.

3.2.2 Aluminum foil.

3.2.3 Gas-fired oven.

3.2.4 Elpo bath and coating apparatus.

3.2.5 Colorimeter.

3.2.6 100 mm x 300 mm cold roll steel (CRS) test panel.

3.2.7 Paint spray equipment.

3.3 Test Vehicle/Test Piece. Not applicable.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Not applicable.

4 Procedure

4.1 Preparation.

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4.1.1 Properly apply and cure the coating or surface treatment over the specified substrate part or panel following all manufacturer's application, film build, and bake recommendations.

4.1.2 Calibrate instruments per manufacturer's instructions.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

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 Clean, if necessary, and remove the rim from two 0.24 L cans.

4.3.2 Coat one can with the test ELPO and one can with a control ELPO. Both cans should be coated to the specified film thickness. Be sure no air is trapped in the cans. A paperclip should be used to suspend each can for coating.

4.3.3 Allow the cans to air dry. Residual water can be blown off with clean compressed air.

4.3.4 Tightly cover the open end of each can with aluminum foil.

4.3.5 Place each can in a gas fired oven with aluminum foil side down. Bake at target time and temperature.

4.3.6 Prepare a 100 mm x 300 mm CRS panel by punching 0.62 mm holes 80 mm and 220 mm from one end. Each hole should be equidistant from the long sides of the panel.

4.3.7 Draw an outline of a 0.24 L can around each circle with a permanent marker so that the hole is in the center of the circle.

4.3.8 Topcoat the panel with white basecoat/clearcoat and place it painted side down over both cans after the aluminum foil has been removed. Each can should be centered under a hole.

4.3.9 Bake the panel on top of the cans at target topcoat time and temperature (see Figure 1).

4.3.10 Remove the cans and panel from the oven to measure L, A, and B value with a colorimeter. The measurements should be made within each circle and at a point outside each circle which is indicated in Figure 2. Evaluate the delta E and the delta B values for the control and the test ELPO and compare.

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