WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW16656

Compatibility Test of Oils, Greases, Prelubes and Similar Materials with Electrocoat Paint Systems

1 Scope

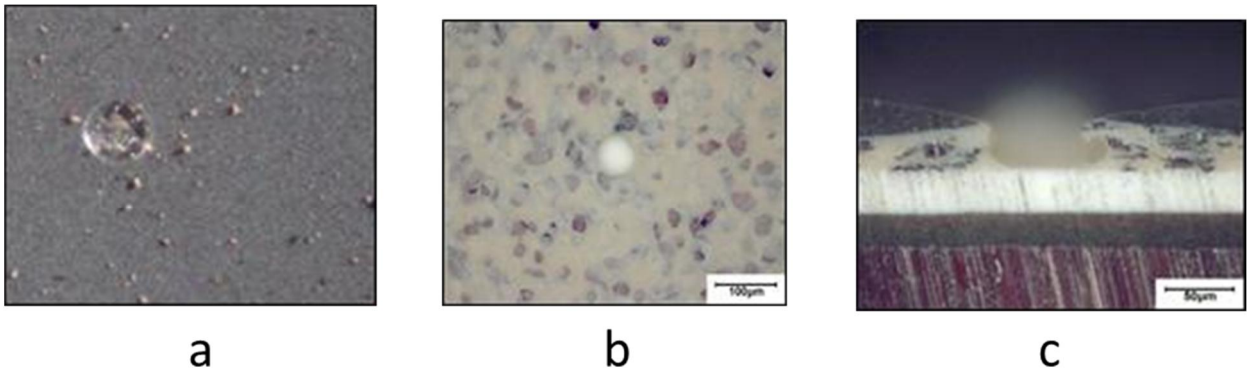
Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. This standard shall serve to evaluate the impact of contaminants such as mills oils, greases, prelubes and similar materials on the electrocoat paint system.

1.1.1 Depending on the properties and amount of the material introduced to the electrocoat system, the contaminating effect may appear in the form of surface defects such as craters (depression in surface) or pin holes (pop from inside-out). See Figure 1.

Figure 1: Surface Defects



a Crater example
b Pinhole example
c 400x Cross Section of Pinhole

1.1.2 If such defects occur, they may also appear/ “telegraph”, through subsequent Paint layers (e.g. Primer Surfacer and Topcoat).

1.1.3 This standard will provide the opportunity to compare the effects of different oils, greases, prelubes, etc) as introduced to an electrocoat system versus a known, compatible lubricant as control.

1.2 Foreword. This standard describes a method for evaluating the impact of metal forming lubricants and other oils or greases, introduced to an electrocoat (ELPO) bath. Lubricants can be trapped in hem flanges or other tight fitting areas and then, be expelled into the ELPO dip tank or onto exposed (Exterior) body surfaces during the ELPO cure process, causing contamination defects. These defects which accumulate on appearance (Exterior) panels must be repaired to achieve an acceptable paint finish, adding high cost to the Paint process.

1.3 Applicability. Electrocoat Paint Operation.

2 References

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

© Copyright 2013 General Motors Company All Rights Reserved

Documents
Document Sharing Hub
Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GMW GMW16656 2013

2.1 External Standards/Specifications.

ISO 7056

2.2 GM Standards/Specifications.

GMW3002	GMW3011
GMW3005	GMW16170
GMW3008	GMW16546

2.3 Additional References.

Data sheets for all current, control and NEW lubricants to be evaluated.

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.

3.1.1 Laboratory installation for processing of Electrocoat Dip Primers (ELPO).

3.2 Equipment.

3.2.1 Suitable synthetic Laboratory agitator.

3.2.2 Beaker. (3 to 5) l and pipettes (ISO 7056 or similar). Glass is also suitable).

Note: Beaker size is dependent upon the agitator size used and the immersion bath depth of the electrocoat.

3.2.3 Thermostat. Capable of maintaining a selected temperature of ± 2 °C for ELPO.

3.2.4 Drying Oven. Volume: 0.39 m^3 minimum, temperature up to +190 °C (374°F).

3.2.5 Analytical Balance. Weighing accuracy ≈ 0.01 g.

3.2.6 Dispersing Apparatus.

3.2.6.1 High speed dispersing device.

3.2.6.2 High speed magnetic stirrer (magnetic bar of 3 cm minimum).

3.3 Test Vehicle/Test Piece.

3.3.1 Test Panels. Standard test panel: According to GMW3011and GMW16170.

Thin Film or Phosphate pretreated steel panels 100 mm x 300 mm of substrate type, defined by requesting Engineer.

3.3.2 Phosphate per specific GM Plant where grease, lubricant, etc. may be introduced and for all applicable metal substrates. Panels may be Plant or Laboratory prepared. Substrates and test procedures for Lubricant Compatibility with GM pretreatment systems are defined in GMW16546.

3.3.3 Control Lubricant. Current lubricant to be replaced and/or FUCHS RP4107S.

3.3.4 Test Material for ELPO Painting.

3.3.3.1 Approved ELPO (GMW3008), material from the production line or laboratory preparation.

3.3.3.2 New or modified ELPO material.

3.4 Test Time. See paragraphs 4.3.1 and 4.3.2.

3.5 Test Required Information. Before any testing is initiated, review testing scope and detail with requesting engineer.

3.6 Personnel/Skills. Not applicable.

4 Procedure

4.1 Preparation.

4.1.1 Shear off six 30 mm x 100 mm pieces from the 100 mm x 300 mm panels. These pieces shall be used as an overlay on the 100 mm x 300 mm panels if a Crevice Test shall be performed.

© Copyright 2013 General Motors Company All Rights Reserved

Documents
Document Sharing Hub

Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GMW GMW16656 2013