CALIFORNIA STATE TRANSPORTATION AGENCY

DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
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METHOD OF TEST FOR EVALUATING PAINTED METAL TARGET PLATE MATERIAL

CAUTION: Prior to handling test materials, performing equipment setups, and/or conducting this method, testers are required to read "**SAFETY AND HEALTH**" in Part 8 of this method. It is the responsibility of the user of this method to consult and use departmental safety and health practices and determine the applicability of regulatory limitations before any testing is performed.

A. SCOPE

This test method describes the procedures for evaluating white painted metal used for guide markers, milepost markers, under drain markers, conduit markers, cattle pass markers, clearance markers, and horizontal reflector markers. This test method is divided into the following parts:

1. Dry Film Thickness
2. Coating Hardness
3. Impact Resistance
4. Coating Adherence
5. Weatherability by Artificial Accelerated Weathering
6. Specular Gloss
7. Color
8. Safety and Health

B. REFERENCES

California Test 660 — Evaluating Color by Means of Chromaticity Coordinates
ASTM D 523 — Specular Gloss
ASTM D 2794 — Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D 3359 — Measuring Adhesion by Tape Test
ASTM D 3363 — Film Hardness by Pencil Test
ASTM D 7091 — Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous and Nonferrous Metals.
ASTM E 1347 — Color and Color Difference Measurement by Tristimulus Colorimetry
ASTM G 155 — Operating Xenon ARC Light Apparatus for Exposure of Non-Metallic Materials
1931 CIE Standard Observer Coordinate System.
Caltrans Laboratory Safety Manual

PART I. DRY FILM THICKNESS

1A. SCOPE

This method describes one of several acceptable ways of determining the dry film thickness of paint on a metal substrate.

1B. PROCEDURE

Use the apparatus and the procedures as specified in ASTM D 7091.

PART 2. COATING HARDNESS

2A. APPARATUS

1. A set of pencils that meet the requirements in ASTM D 3363.
2. Fine grit sandpaper or emery cloth is required.

2B. PROCEDURE

1. This method describes the procedure for determining the relative hardness of a paint coating.
2. Test the cured coating in accordance with ASTM D 3363.
3. Report the pencil lead hardness of the paint film.

PART 3. IMPACT RESISTANCE

3A. APPARATUS

A variable impact-testing machine shall conform to the requirements in ASTM D 2794.

3B. PROCEDURE

1. Subject either side of the sample, at 25˚ C, to an impact force equivalent to 40 inch-pounds.
2. There should be no loss of adhesion, cracking or flaking of the coating at the site of impact.

PART 4. COATING ADHESION

4A. PROCEDURE

Test materials in accordance with ASTM D 3359.

PART 5. WEATHERABILITY BY ARTIFICAL ACCELERATED WEATHERING

5A. APPARATUS

Test apparatus described in ASTM G 155, using the method described in Table X3.1, Cycle 1.

5B. PROCEDURE

1. From a coated target plate, cut a coupon the correct size to fit into the artificial weathering apparatus.
2. Place in the instrument for 1000 hr of exposure.
3. Remove panel and measure the daylight luminous directional reflectance in accordance with Part 7 of this test method.

PART 6. SPECULAR GLOSS

6A. PROCEDURE

1. Use the apparatus and procedures specified in ASTM D 523.
2. Report the gloss reading at 60° geometry.

PART 7. COLOR

7A. PROCEDURE

1. Test in accordance with California Test 660 or use the procedures and apparatus described in ASTM E 1347. The measurement geometry shall be Normal/45° or 45°/Normal.
2. Plot the x and y chromaticity coordinates on a chromaticity chart compiled according to the 1931 CIE Standard Observer Coordinate System. The percent purity is read directly from the chart. Record the daylight luminous directional reflectance ("Y" value) reading on the chart.

PART 8. SAFETY AND HEALTH

It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Prior to handling, testing or disposing of any materials, testers must be knowledgeable about safe laboratory practices, hazards and exposure, chemical procurement and storage and personal protective apparel and equipment.

The Caltrans Laboratory Safety Manual is available at:

http://dot.ca.gov/

End of Text
(California Test 671 contains 3 pages)