This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: D868 – 10 (Reapproved 2020)

Standard Practice for Determination of Degree of Bleeding of Traffic Paint[1]

This standard is issued under the fixed designation D868; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice describes test procedures for determining the degree of bleeding of traffic or pavement marking paints. A specific formulation for a solventborne traffic paint formulation is included as a potential bleeding reference control.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D226 Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

D227 Specification for Coal-Tar-Saturated Organic Felt Used in Roofing and Waterproofing

D476 Classification for Dry Pigmentary Titanium Dioxide Products

D867 Specification for Pumice Pigment (Withdrawn 1993)[3]

D1199 Specification for Calcium Carbonate Pigments

D2244 Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates

E1347 Test Method for Color and Color-Difference Measurement by Tristimulus Colorimetry

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *bleeding characteristic, n*—that condition of discoloration manifested in traffic paint when applied to tar or asphaltic-type substrates.

3.1.1.1 *Discussion*—The amount of discoloration can be comparing the color of the test coating and a specific reference coating using colorimetric measurements or by visual comparison to the amount of bleeding in a reference photograph.

4. Significance and Use

4.1 Solvents in a traffic paint may cause bleeding of pavement constituents into the traffic marking, thereby rendering the traffic marking less effective as a lane or directional indicator. This practice describes how to prepare a panel of the coating to be tested and a reference panel coated with a specific solventborne traffic paint to be used as a control for evaluation.

4.2 This practice can be particularly useful for evaluation of solventborne traffic paints, but it may also be used for other types of traffic markings including waterborne traffic paints.

4.3 Two basic procedures are described for measuring the amount of bleeding. The procedure used shall be agreed upon by the purchaser and seller.

5. Apparatus

5.1 *Film Applicator*—A conventional type drawdown gage that casts a film having a minimum width of 50 mm (2 in.) and an approximate wet thickness of 380 µm (15 mils) (using an applicator clearance of approximately 760 µm (30 mils)).

5.2 *Test Panel for Coal-Tar Substrate*—A 127 by 254-mm (5 by 10-in.) piece cut from a standard roll of so-called "6.8-kg (15-lb) coal-tar saturated heat resistant or rag felt." Unless otherwise specified, use a Specification D227 coal tar saturated felt.

5.3 *Test Panel for Asphalt Substrate*—A 127 by 254-mm (5 by 10-in.) piece cut from a standard roll of 6.8-kg (15-lb) asphalt-saturated felt. Unless otherwise specified, use a Specification D226 (Type 1) asphalt saturated felt.

[1] This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.44 on Traffic Coatings.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.

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5.4 *Paint Composition for Use as a Control*—The paint composition shown in Table 1 can be used as a control when applied to 6.8 kg (15 lb) felt. This formulation will show severe bleeding when applied on a coal tar substrate and a somewhat lower degree of bleeding when applied on the asphalt felt substrate.

6. Preparation of Test Panels

6.1 Cut 125 by 255 mm (5 by 10 in.) pieces from a roll of coal tar or asphalt substrate. The specimens shall be cut at least 127 mm (5 in.) in from the edge.

6.2 Prepare the non-bleeding contrast surface by attaching a 25 mm (1 in.) of cellophane tape to the coal tar or asphalt substrate piece using firm pressure. The tape shall be positioned so that the outside edge is at least 25 mm (1 in.) from the edge and parallel to the edge of the substrate piece.

7. Procedure

7.1 Place the test panel on a smooth flat surface (such as a glass panel), with the tape side up on the left, and hold in a flat position by weighting down the edges.

7.2 Draw the paint under test down over the specimen panel in such a manner that the entire width of the tape is covered, leaving the remainder of the film to the right of the tape in direct contact with the test panels. Apply the paint under test at a thickness to ensure complete hiding.

7.3 Keep the coated panel in a flat position until the film is set (after which the weights may be removed) and allow the coated panel to dry for 48 h at 21 to 27°C (70 to 80°F).

TABLE 1 Control Paint Formulation for Felt Substrates

Material	Weight Percent
Titanium dioxide, TiO2 (Classification D476, Type II, Class II)	15.40 %
Calcium carbonate, CaCO3, conforming to Specification D1199	44.00 %
Aluminum stearate (a 5 % mixture in toluene shall gel at temperatures below 49.9°C (120°F)	0.15 %
Pumice, No. 100 conforming to Specification D867	6.16 %
Alkyd resin solution, pure oxidizing 52 % modified soya oil, 50 % solution in 36 K.B. mineral spirits	29.89 %
V.M. & P. naphtha	3.78 %
Lead naphthenate, 24 %	0.40 %
Cobalt naphthenate, 6 %	0.09 %
Anti-skinning agent	0.13 %
Total	100.00 %

7.4 Immediately after completion of 48-h drying, determine the contrast in color between the portion of the film over the tape and that portion that is in direct contact with the test panels using one of the following two procedures. The procedure used shall be agreed upon by purchaser and seller.

7.4.1 *Procedure A:*

7.4.1.1 Measure color in accordance with Test Method E1347 in the non-bleed reference area and in the area where bleeding is allowed to occur. Make these measurements in at least three positions in both the non-bleed reference area and in the area where bleeding is allowed to occur. Determine the ratio between the CIE L* value measured for the area where bleeding is allowed to the CIE L* value measured in the non-bleed reference area. Calculate the average of these ratios.

7.4.1.2 Alternatively, determine the delta E in accordance with Practice D2244 for the area where bleeding is allowed to occur compared to the non-bleed reference area. Calculate the average of the delta E values.

7.4.2 *Procedure B:*

7.4.2.1 Visually compare the contrast between the non-bleed reference area and the area where bleeding is allowed to occur to the reference photograph in Fig. 1.

NOTE 1—More consistent results are obtained for the visual comparisons if the same operator makes the evaluations and when the evaluations are made in an area where the lighting conditions are as consistent as possible.

8. Report

8.1 Report the following information.

8.1.1 Identification of the traffic paint being tested.

8.1.2 Any deviations from the procedure for preparation of the test panels from those described in this practice.

8.1.3 For Procedure A, the average ration of CIE L* between the area where bleeding is allowed and the non-bleed reference area, or the average delta E of the area where bleeding is allowed relative to the non-bleed reference area.

8.1.4 For Procedure B, the amount of bleeding based on comparison to the referenced photograph in Fig. 1.

9. Keywords

9.1 bleeding; traffic paint

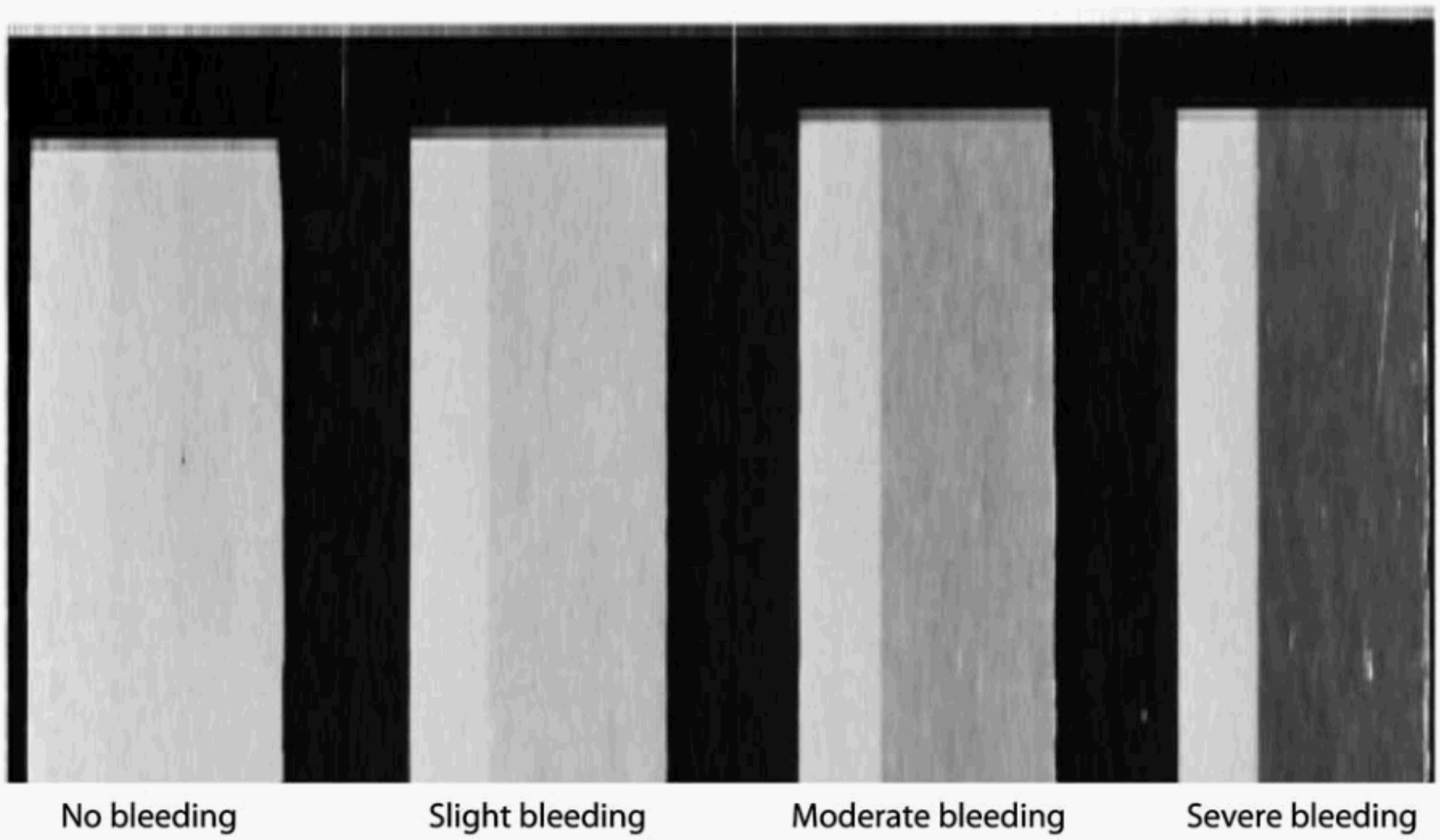

FIG. 1 Reference Photograph Showing Various Levels of Bleeding of a Traffic Paint

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