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# Standard Practice for Sample Preparation of Transparent Plastic Films for Specular Gloss Measurements, on Membrane Switch Overlays[1]

This standard is issued under the fixed designation F 1843; 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 covers the method of sample preparation, prior to taking gloss measurements on a membrane switch overlay.

1.2 Typical applications include window display areas on a graphic overlay, and surface texture.

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 and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

2.1 *ASTM Standards:*

D 523 Test Method for Specular Gloss[2]

## 3. Terminology

3.1 *Definitions:*

3.1.1 *membrane switch*, *n*—a momentary switching device in which at least one contact is on (or made of) a flexible substrate.

3.1.2 *specular gloss*, *n*—the degree to which a surface simulates a perfect mirror in its capacity to reflect incident light.

3.1.3 *overlay*, *n*—the outer layer of a membrane switch on which the graphics are printed.

## 4. Summary of Practice

4.1 A water or alcohol droplet is placed on a black metal plate. The specimen to be measured is pressed down over the droplet. Capillary action causes intimate contact between specimen and plate, thereby eliminating second surface reflection. Gloss readings may then be taken in accordance with Test Method D 523.

## 5. Significance and Use

5.1 Gloss measurements are used to qualify a raw material or finished product.

5.2 Sample preparation will effect the outcome of gloss readings. This practice will eliminate second surface reflection, and allow a more accurate gloss reading of the substrate.

5.3 Materials which require this preparation include the following: clear or translucent substrates, colored transparent substrates, and areas printed with clear, translucent, or transparent colored coatings.

## 6. Apparatus

6.1 *Gloss Meter*, in accordance with Test Method D 523.

6.2 *Black Iodized Aluminum Test Plate*[3], This plate is to be a hard, flat, smooth, matte black, nonporous surface. Gloss readings should be between 4 to 12 gloss units, when measured with a 60° gloss meter. Plate size should be sufficient to allow the specimen to be laid flat for readings, typically 12 by 12 in. (304.8 by 304.8 mm). Material thickness to be 0.062 in. ( 1.57 mm) or thicker.

6.3 *Distilled Water*, or *Isopropyl Alcohol.*

6.4 *Eye Dropper*.

6.5 *Hand Held Brayer* (rubber roller).

## 7. Procedure

7.1 Verify the specimen and plate are clean, dry, and free of contamination.

7.2 Use the eyedropper to place a few drops of distilled water or isopropyl alcohol in the center of the black plate.

7.3 Position the specimen over the droplet(s), with the side requiring a gloss reading facing up.

7.4 Slowly press the specimen down onto the plate.

7.5 Smooth out the specimen using a brayer. The measurement area of the specimen will appear darker, which is an indication of intimate contact.

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[1] This practice is under the jurisdiction of ASTM Committee F01 on Electronics and is the direct responsibility of Subcommittee F01.18 on Membrane Switches.

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[2] *Annual Book of ASTM Standards*, Vol 06.01.

[3] A black anodized aluminum plate with the designation "AAM21C22A43 -DYED BLACK, ALUMINUM ALLOY 6061 -T6 matte etch" is suitable for this purpose.

7.6 The measurement area should be large enough to cover the sample port of the gloss meter.

7.7 Ensure there are no air bubbles within the measurement area. Air entrapment will prevent intimate contact of specimen to plate, which will appear as lighter areas. If this occurs, remove the specimen from the plate and repeat 7.1 to 7.6.

7.8 Gloss readings may be taken in accordance with Test Method D 523.

## 8. Keywords

8.1 gloss; membrane switch; plastics, translucent; plastics, transparent