



Designation: D 3964 – 80 (Reapproved 1998)

Standard Practice for Selection of Coating Specimens for Appearance Measurements¹

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INTRODUCTION

In making appearance measurements, it is important that the specimens selected be representative of the material of interest. Once selected, the specimens must be carefully examined to determine if they are suitable for measurement, and if not, they must be cleaned or otherwise prepared. Careful attention to these factors is necessary if the measurements are to be valid.

1. Scope

1.1 This practice provides a guide to selection of specimens for appearance measurement as well as a discussion of factors to be considered in their preparation for measurement. Standardized selection and presentation procedures will assist in achieving agreement between evaluations carried out in different laboratories as well as helping to achieve better correlations between visual evaluations and instrumental measurements.

NOTE 1—This standard is not a practice for preparation of test panels of coatings; see Practices D 823.

1.2 *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 823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels²
- E 284 Terminology Relating to Appearance of Materials²

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this practice, refer to Terminology E 284.

4. Significance and Use

4.1 Many of the specimens that are regularly submitted to measurement depart in some degree from the ideal require-

ments. For this reason instrumental readings are affected importantly by the manner in which specimens are selected and presented for measurement. Reproducible measurements are facilitated by standardization and control of test conditions.

5. General Requirements

5.1 *Specimen Size*—The minimum size is dictated by the size of the specimen port of the instrument to be used for measurement. When an instrument provides a choice of specimen port sizes, use the largest port that can be completely covered by the specimen. A large measured area helps to minimize the effect of any small area nonuniformity and is therefore more likely to provide results that agree with the involuntary averaging that takes place when specimens are observed visually. A large specimen also permits the operator to make measurements on several areas of the specimen when desired thereby providing further specimen averaging.

5.2 *Opacity*—An opaque specimen shall be selected whenever possible for gloss and color evaluation. When the specimen is translucent or transparent, the following points should be considered:

5.2.1 *For Gloss Evaluation*—The specimen shall be sufficiently thick that a secondary reflection from the back or second surface of the specimen cannot enter the receptor optics of the glossmeter. When thin transparent specimens must be measured, adopt one of the following procedures:

5.2.1.1 Back the specimen with a light absorbing material of the same refractive index as the specimen, and in optical contact with it.

5.2.1.2 Use an agreed upon specimen thickness, including coating and substrate and place a black backing behind the specimen.

5.2.2 *For Color Evaluation*—The choice of backing of even slightly translucent specimens will affect their measurement. Use the most applicable of the backing techniques that follow.

¹ This practice is under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.26 on Optical Properties.

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