



Designation: D3210 – 95 (Reapproved 2023)

Standard Test Method for Comparing Colors of Films from Water-Emulsion Floor Polishes¹

This standard is issued under the fixed designation D3210; 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 test method covers comparing colors of films (or solids) deposited from the emulsified particles in water emulsion floor polishes. It is based upon luminous reflectance measurements made with tristimulus colorimeters such as the Hunter Color Difference Meter.²

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:³

E259 Practice for Preparation of Pressed Powder White Reflectance Factor Transfer Standards for Hemispherical and Bi-Directional Geometries

3. Terminology

3.1 Definitions:

¹ This test method is under the jurisdiction of ASTM Committee D21 on Polishes and is the direct responsibility of Subcommittee D21.04 on Performance Tests. Current edition approved Sept. 1, 2023. Published September 2023. Originally approved in 1973. Last previous edition approved in 2016 as D3210 – 95 (2016). DOI: 10.1520/D3210-95R23.

² Hunter, R. S., "Photoelectric Color Difference Meter," *Journal of the Optical Society*, Vol. 48, 1958, p. 985.

³ 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.

3.1.1 *whiteness index, n*—a color measurement calculated from the equation⁴

$$WI = L - 3b \quad (1)$$

where L and b are values measured directly with the Color Difference Meter. L measures lightness, which is 100 for perfectly white and zero for black; and b measures yellowness when plus, blueness when minus, and zero for neutral gray or white. Conversion factors for instruments reading in X , Y , Z units are:

$$L = 10\sqrt{Y} \quad b = 7.0(Y - 0.847Z)/\sqrt{Y} \quad (2)$$

4. Summary of Test Method

4.1 Reflectance measurements are made on exaggerated or heavy dried polish films produced by saturating white filter paper. The color measurement is expressed as whiteness index.

5. Significance and Use

5.1 Whiteness index obtained from reflectance measurements on exaggerated dried polish films on filter paper can be used as a measurement of the color of such films.

5.2 Whiteness index may be useful in predicting the potential discoloring effect of polish films on flooring substrates.

5.3 Whiteness index should be useful in specifications when color comparisons are made with a standard sample polish.

6. Apparatus

6.1 *Tristimulus Colorimeter*, which gives reflectance readings which in turn are converted by calculations to L , a , and b color scale values, or these color scale values may be read directly from an instrument that automatically makes the calculations. Other apparatus is satisfactory if equivalent results are obtained.

6.2 *Filter Paper*, medium flow rate, cut into strips 76.2 mm by 152.4 mm (3 in. by 6 in.).

6.3 *Spring Clamp*, approximately 76 mm (3 in.) wide, two are required.

⁴ Hunter, R. S., "Instruments and Test Methods for Control of Whiteness in Textile Mills," *American Dyestuff Reporter*, Vol 56, No. 25, Dec. 4, 1967, pp. 80–87.