

Standard Method of PREPARATION OF A MAGNESIUM OXIDE STANDARD FOR SPECTRAL REFLECTIVITY¹



ASTM Designation: D 986 - 50

ADOPTED, 1950.²

Reapproved in 1958 Without Change.

This Standard of the American Society for Testing Materials is issued under the fixed designation D 986; the final number indicates the year of original adoption as standard or, in the case of revision, the year of last revision.

Scope

1. This method covers the preparation of a magnesium oxide standard³ for calibrating apparatus used in determining the reflectance and spectral reflectivity of paper and paperboard. The smoke from magnesium freely burning in air, deposited on a satisfactory base, forms a uniform, fine-grained, diffusing surface of a high reflectance. This surface of magnesium oxide (MgO) may be made reproducible; hence, it serves as a convenient and reliable standard.

NOTE.—This magnesium oxide standard is used in the Standard Method of Test for 45-Deg., 0-Deg. Directional Reflectance for Blue Light (Brightness) of Paper (A.S.T.M. Designation: D 985).⁴

Materials

2. (a) *Magnesium*.—The magnesium

¹ Under the standardization procedure of the Society, this method is under the jurisdiction of the A.S.T.M. Committee D-6 on Paper and Paper Products.

² Prior to adoption as standard, this method was published as tentative from 1948 to 1950.

³ The following reference may be of interest in connection with this method:

"Preparation and Colorimetric Properties of a Magnesium Oxide Reflectance Standard," *Lettler Circular LC 547*, Nat. Bureau Standards, March, 1939.

⁴ 1964 Book of ASTM Standards, Part 15.

should have high purity and be in either of the following forms (Note): (1) turnings approximately 0.02 in. in thickness and $\frac{1}{8}$ in. in width, preferably of spiral shape, and containing a minimum of magnesium dust; or (2) magnesium ribbon 0.006 in. in thickness and $\frac{1}{8}$ in. in width.

NOTE.—Magnesium ribbon is preferred for small surfaces employed in standardization; however, where large surfaces are to be coated, magnesium turnings are preferred.

(b) *Base*.—The magnesium oxide shall be deposited on a surface not affected in air by the heat from the burning magnesium. A satisfactory base may be made of aluminum, block porcelain, sheet steel coated with white vitreous enamel, a baked surface of a sprayed mixture of magnesium oxide powder and distilled water, or a block of magnesium carbonate. Milk or opal glass is often unsatisfactory because it easily cracks from heating. Depolished surfaces are better than polished because the oxide adheres better; for the same reason, metallic surfaces are usually to be preferred to non-