

Tentative Method of Test for

HAZE OF TRANSPARENT PLASTICS BY PHOTOELECTRIC CELL¹



A.S.T.M. Designation: D 672 - 45 T

ISSUED, 1942; REVISED, 1944, 1945.²

This Tentative Method has been approved by the sponsoring committee and accepted by the Society in accordance with established procedures, for use pending adoption as standard. Suggestions for revisions should be addressed to the Society at 1916 Race St., Philadelphia 3, Pa.

Scope

1. This method of test is designed to measure photoelectrically the haze of colored or colorless transparent plastics, using specimens with substantially plane, parallel faces. It is not recommended for the measurement of low ranges of haze (less than 3 per cent), nor is it intended for use in evaluating translucent plastics, nor for measuring light transmission.

Definition

2. *Haze*.—Haze is that fraction of the total transmitted light from a normally incident beam which is not transmitted in a straight line, and is calculated as follows:

$$\text{Haze, per cent} = \frac{T - T_r}{T} \times 100 = \frac{T_d}{T} \times 100$$

where:

T = total light transmitted,

T_r = amount of light transmitted in a straight line, and

T_d = amount of light transmitted in all directions except rectilinearly.

Apparatus

3. (a) The apparatus shall consist of a haze meter, the optical geometry of which shall be as shown in Fig. 1. The light source shall be a concentrated filament tungsten lamp which shall be operated at its rated voltage. The photoelectric cell shall be of the barrier layer type having a sensitive surface 1.5 in. in diameter and a spectral response which approximates that of the average human eye.³ A collimated beam from this lamp shall be made to pass through a circular aperture 1 in. in diameter, which it shall completely fill, and to fall centrally on the sensitive surface of the photoelectric cell 18 in. from the aperture. The collimation of the beam shall be such that in the region between the aperture and the photoelectric cell the convergence or divergence of the edge of the beam shall not exceed 20 min. of arc (Note).

NOTE.—If this condition is satisfied, the diameter of the illuminated spot on the photoelectric cell will lie between 0.9 and 1.1 in.

(b) The photoelectric cell shall be connected to a meter having such characteristics that its readings are accurately proportional to the quantity of light falling on the surface of the specified

¹ Under the standardization procedure of the Society, this method is under the jurisdiction of the A.S.T.M. Committee D-20 on Plastics.

² Latest revision accepted by Committee E-10 on Standards, June 27, 1945.

³ The Weston "Photronic" cells types I and III, if corrected by "Viscor" filters, are satisfactory.