

Tentative Method of Test for WATER VAPOR PERMEABILITY OF PLASTIC SHEETS¹



A.S.T.M. Designation: D 697 - 42 T

ISSUED, 1942.²

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 describes procedures for determining the water vapor permeability of plastic sheet made with paper, paperboard, transparent sheeting, plastic sheeting, and other sheet materials suitably bonded together with plastics. There may be considerable difference in the permeability of a plastic sheet when the two faces are exposed, respectively, to (a) a low humidity on one face and a medium humidity on the other, and (b) a high humidity on one face and a medium humidity on the other. These methods provide procedures for the measurement of permeability under both of these conditions. When special use requirements of the materials to be tested are involved, such as applications at other temperatures or under other humidity differences, the test conditions may be varied accordingly.

Apparatus

2. The apparatus shall consist of the following:

(a) *Test Dish*.—An open mouthed cup or dish of such size and shape that it can be accommodated readily on the pan of an analytical balance. The area of the opening shall be as large as practicable, an area of at least 30 sq. cm. being preferred. The test dish shall be of such design that a satisfactory seal can be made to prevent leakage of water vapor at or through the edges of the test specimen and to define clearly the test area. Suitable designs for the dish with supporting ring or flange are shown in Figs. 1 to 3. Other modifications of these designs may be made, without departing from the principle of preventing edge leakage by means of a complete wax seal.

(b) *Template*.—A template for use in defining the test area and effecting the wax seal. The template shall consist preferably of a circular metal disk $\frac{1}{8}$ in. in thickness, made from brass, aluminum, or other suitable metal, and having the edge beveled to an angle of about 45 deg. The smaller diameter of the template shall be equal to the diameter of the test area of the specimen.

(c) *Desiccant*.—A desiccant having a powerful affinity for water vapor and a high drying efficiency, that is, a low vapor pressure after absorbing a large

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 Accepted by Committee E-10 on Standards, August 24, 1942.