

Standard Method of Test for CASEIN IN PAPER (QUALITATIVE)¹



A.S.T.M. Designation: D 587 - 42

ADOPTED, 1942.²

This Standard of the American Society for Testing Materials is issued under the fixed designation D 587; 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 a qualitative test for casein in paper. It is applicable only to papers in which the amount of casein is relatively large, for example, mineral-coated papers in which casein is commonly used as the binder. It is not applicable to papers containing such small amounts of casein as may be used in the beater furnish as a constituent of the engine sizing, etc.

Reagents

2. (a) *Sodium Hydroxide Solution* (1 per cent).

(b) *Nitric Acid* (sp. gr. 1.42).

(c) *Millon's Reagent*.—Dissolve 20 g. of pure mercury in 40 g. of c.p. HNO_3 (sp. gr. 1.42) and dilute to 180 ml. with distilled water.

Test Specimen

3. The specimen shall consist of about 0.5 g. of paper, cut into small pieces, and so selected as to be representative of the sample.

Procedure

4. Boil the specimen several minutes in a test tube with 10 ml. of NaOH (1 per cent). (The NaOH is required to dissolve casein that has been hardened by formaldehyde or other agent.) Filter off the aqueous extract, cool to room temperature, add a suitable indicator, such as phenolphthalein, and exactly neutralize with HNO_3 (sp. gr. 1.42). Add several milliliters of the Millon's reagent. Upon heating, the presence of casein is indicated by the development of a red coloration (Note).

NOTE.—This reaction is dependent on the presence of tyrosine which occurs in casein to the extent of approximately 5 per cent, but has been reported in only rare instances as occurring in animal glue and gelatin, and then only in doubtful traces.

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 1940 to 1942.