

Standard Method of Test for STARCH IN PAPER¹



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This Standard of the American Society for Testing Materials is issued under the fixed designation D 591; 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 of test covers procedures for the qualitative and quantitative determination of starch in paper.

QUALITATIVE TEST

Qualitative Test

2. A positive result obtained by the following procedure shall be regarded as conclusive evidence of the presence of starch in paper:

Boil about 0.5 g. of the sample for several minutes with 10 ml. of water. Filter off the extract, cool it, and add one drop of approximately 0.001 *N* iodine solution (Note). A blue coloration indicates starch. If only a faint violet coloration is obtained, this should be disregarded, as constituents of paper other than starch sometimes give such a reaction.

NOTE.—It is convenient to prepare an approximately 0.01 *N* stock solution of iodine

(0.13 g. of iodine and 2.6 g. of KI in 100 ml. of water) and dilute a portion of this to a pale yellow color (about 0.001 *N*) each time a test for starch is made.

QUANTITATIVE DETERMINATION

Apparatus

3. *Balance*.—The balance shall be sensitive to 1 mg.

Reagents

4. (a) *Ammonium Hydroxide* (approximately 6 *N*).—Mix 400 ml. of NH_4OH (sp. gr. 0.90) with 700 ml. of water.

(b) *Hydrochloric Acid* (5:4).—Dilute five volumes of c.p. HCl (sp. gr. 1.19) with four volumes of water.

(c) *Iodine Solution* (approximately 0.02 *N*).—Dissolve 5 g. of KI in about 10 ml. of water; then dissolve in this solution 2.6 g. of iodine and dilute to 1 liter.

(d) *Universal Indicator*.³—Dissolve 0.005 g. of thymol blue, 0.0125 g. of

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.

³ S. Yamada, Japanese Patent 99664, February 21, 1933; *Chemical Abstracts*, Vol. 28, April 20, 1934, p. 2258; D. T. Jackson and John L. A. Parsons, "A Universal Hydrogen Ion Indicator," *Tech. Assoc. of Pulp and Paper Industry*, Papers 1936, p. 236.