



Standard Test Method for TOTAL CHLORIDE CONTENT OF PAPER AND PAPER PRODUCTS¹

This Standard is issued under the fixed designation D 1161; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.

1. Scope

1.1 This method² covers the determination of the chloride content of paper, pulp, and paper products. It is suitable for bleached grades or for unbleached grades where the total chlorides may be low. The techniques involved are not adequate for determining significant differences where the total chlorides found by this method are below 50 ppm.

NOTE 1—Some loss of chlorides may occur if the ashing of the paper is done at too high a temperature. It is important that the sample be ignited and ashed as outlined with the temperature not exceeding 600 C.

2. Significance

2.1 Excessive amounts of chlorides in paper indicate the presence of electrolytes, which may affect the permanence of paper in certain industrial applications. Chlorides may also cause corrosion of metal in contact with the paper in such applications as wire insulation and in packaging of polished metal articles.

NOTE 2—A method for determination of water-soluble chlorides is included in ASTM Methods D 202, Sampling and Testing Untreated Paper Used for Electrical Insulation.³

3. Apparatus

3.1 *Muffle Furnace*, equipped with control mechanism to regulate temperature to 600 C.

3.2 *Drying Lamps*, 250 R40 infrared reflector lamps with supports and connecting cords.

3.3 *Metal Shield*, used to concentrate heat from the drying lamps. Aluminum sheet 3 mil (0.08 mm) thick is satisfactory.

3.4 *Rubber Gloves*.

3.5 *Dark Room*, equipped with Wratten

Safelight, Series 00. If no dark room is available, a pair of glasses with yellow lenses of equivalent light transmission may be used.

3.6 *Porcelain Crucibles*, Sizes No. 2 and 3, cleaned well with hot chromate cleaning solution followed by thorough washing with distilled water. After drying, ignite the crucibles at 600 C and cool in a desiccator before use.

NOTE 3—During use, these crucibles tend to acquire a coating of carbonaceous materials. When this coating begins to collect too fast (usually after four to five ignitions with samples) the crucible should be cleaned with hot cleaning solution as before and then ignited at about 800 C to remove the coating.

4. Purity of Reagents

4.1 Reagent-grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.⁴ Other grades may be used, provided it is first

¹ This method is under the jurisdiction of ASTM Committee D-6 on Paper and Paper Products.

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² The following references may be of interest in connection with this test method:

Freeman and Lou, "A Comparison of Several Electrometric and Nephelometric Methods for the Estimation of Small Amount of Chloride," *Journal of the American Chemical Society*, JACSA, Vol 57, 1935, p. 1588.

"Aerovox Comparator Method—The Estimation of the Extractable Chloride Content of Insulating Paper."

³ *Annual Book of ASTM Standards*, Part 20.

⁴ "Reagent Chemicals, American Chemical Society Specifications," Am. Chem. Soc., Washington, D. C. For suggestions on the testing of reagents not listed by the American Chemical Society, see "Reagent Chemicals and Standards," by Joseph Rosin, D. Van Nostrand Co., Inc., New York, N.Y., and the "United States Pharmacopeia."