



Standard Test Methods for Chemical Analysis of Fluor-Chrome-Arsenate-Phenol¹

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1. Scope

1.1 These test methods cover the determination of the chemical analysis of commercial fluor-chrome-arsenatephenol.

1.1.1 Test Method D 38 covers the sampling of wood preservatives prior to testing.

1.2 The analytical procedures appear in the following order:

	Sections
Fluorine (calculated as F)	6 to 8
Arsenic (calculated as As ₂ O ₅)	9 and 10
Chromium (calculated as CrO ₃)	11 and 12
Dinitrophenol or sodium pentachlorophenate	13 and 14

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 38 Test Methods for Sampling Wood Preservatives Prior to Testing²
- D 1033 Methods of Chemical Analysis of Chromated Zinc Chloride³
- D 1034 Specification for Fluor-Chrome-Arsenate-Phenol²
- D 1193 Specification for Reagent Water⁴

3. Summary of Test Methods

3.1 **Fluorine**—Fluorine is removed by steam distillation from an acidified sample. The distillate is neutralized and titrated with a standard solution of Thorium Nitrate. Fluorine is calculated as F.

3.2 **Arsenic**—A diluted sample is acidified with Hydrochloric and hypophosphorous acid to precipitate the arsenic. The arsenic is volatilized by heating in the presence of sulfuric acid,

which is then diluted with water and titrated with a standard solution of Potassium Bromate. Arsenic is calculated as As₂O₅.

3.3 **Chromium**—A diluted and chemically treated sample is reacted with an excess of ferrous ammonium sulfate. The unreacted ferrous ammonium sulfate is titrated with a standard solution of potassium dichromate to determine the consumed chromium. Hexavalent chromium is calculated as CrO₃.

3.4 **Phenol**—The sample is dissolved in water, acidified with sulfuric acid to free the phenolic compounds, and washed with ether to take up the phenols. The ether is evaporated and the residue measured as phenols.

4. Significance and Use

4.1 Fluor-Chrome-Arsenate-Phenol for use in the preservative treatment of wood must conform with Specification D 1034.

5. Reagents

5.1 **Purity of Reagents**—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.⁵ Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

5.2 **Purity of Water**—Unless otherwise indicated, references to water shall be understood to mean reagent water conforming to Specification D 1193.

FLUORINE

6. Apparatus

6.1 A suitable apparatus for the distillation of fluorine is shown in Fig. 1.

7. Reagents

7.1 **Potassium Permanganate Solution** (saturated).

7.2 **Sodium Alizarin Sulfonate Indicator**—Dissolve 0.05 g of sodium alizarin sulfonate in 100 mL of water.

¹ These test methods are under the jurisdiction of ASTM Committee D-7 on Wood and are the direct responsibility of Subcommittee D07.06 on Treatments for Wood Products.

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These methods are essentially the same as Sections 2, 5, 7, and 8 of the American Wood-Preservers' Association Standard Methods for Analysis of Water-Borne Preservatives and Fire-Retardant Formulations (A2-84). Acknowledgment is made to the American Wood Preservers' Association for its development of the subject matter covered in this standard.

² *Annual Book of ASTM Standards*, Vol 04.10.

³ Discontinued—See 1992 *Annual Book of ASTM Standards*, Vol 04.09.

⁴ *Annual Book of ASTM Standards*, Vol 11.01.

⁵ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmaceutical Convention, Inc. (USPC), Rockville, MD.