



Standard Test Methods of Sampling and Chemical Analysis of Chlorine-Containing Bleaches¹

This standard is issued under the fixed designation D2022; 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. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 These test methods cover the sampling and chemical analysis of chlorine-containing bleaches. The methods appear in the following order:

	Sections
Sodium Hypochlorite (Soda Bleach) Solutions:	
Sampling	5
Available Chlorine	6 – 9
Sodium Chlorate	10 – 14
Total Chlorine	15 – 18
Sodium Chloride	19 and 20
Total Alkalinity as Sodium Oxide (Na_2O)	21 – 24
Free Alkali as Sodium Hydroxide (NaOH)	25 – 28
Calcium Hypochlorite:	
Sampling	30
Available Chlorine	31 – 34
Water	35 – 40
Chloroisocyanuric Acids and Their Derived Salts:	
Sampling	42
Available Chlorine (Iodometric—Thiosulfate Method)	43 – 46
Available Chlorine (Arsenite—Iodometric Method)	47 – 50
Moisture	51 – 54

1.2 *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.* Material Safety Data Sheets are available for reagents and materials. Review them for hazards prior to usage.

¹ These test methods are under the jurisdiction of ASTM Committee D12 on Soaps and Other Detergents and are the direct responsibility of Subcommittee D12.12 on Analysis and Specifications of Soaps, Synthetics, Detergents and their Components.

Current edition approved July 1, 2016. Published August 2016. Originally approved in 1962. Last previous edition approved in 2008 as D2022 – 89(2008). DOI: 10.1520/D2022-89R16.

2. Referenced Documents

2.1 *ASTM Standards*:²

D1193 Specification for Reagent Water

3. Terminology

3.1 *Definitions*:

3.1.1 *available chlorine*—the measure of the oxidizing powder of the chlorine present as hypochlorite. It is expressed in terms of chlorine with a gram-equivalent weight of 35.46.

4. Reagents

4.1 *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.³ 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.

4.2 Unless otherwise indicated, references to water shall be understood to mean reagent water conforming to Specification D1193.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ *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. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.

SODIUM HYPOCHLORITE (SODA BLEACH) SOLUTIONS

5. Sampling

5.1 The stability of soda bleach is influenced to a considerable degree by the purity of the alkali used in its preparation, by the excess of alkali remaining, and by the kind and amount

of metal contamination from equipment. Owing to the relatively unstable nature of bleach solutions, special attention shall be given to the collection and preservation of the sample.