



Standard Test Methods for Analysis of Soda Ash (Sodium Carbonate)¹

This standard is issued under the fixed designation E359; 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 analyses usually required on commercial soda ash (sodium carbonate).

1.2 The analytical procedures appear in the following sections:

	Sections
Total Alkalinity, Titrimetric	8 – 15
Sodium Bicarbonate, Titrimetric	16 – 23
Loss on Heating, Gravimetric	24 – 30
Moisture, Calculation	31 – 35
Sodium Chloride, Titrimetric	36 – 42
Sodium Sulfate, Gravimetric	43 – 49
Iron, Photometric	50 – 58
Sieve Analysis	59 – 65

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 Review the current Materials Safety Data Sheets (MSDS) for detailed information concerning toxicity, first aid procedures, handling and safety precautions.

1.5 *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.* Specific hazards statements are given in Section 6.

2. Referenced Documents

2.1 *ASTM Standards*:²

C429 Test Method for Sieve Analysis of Raw Materials for Glass Manufacture

D1193 Specification for Reagent Water

¹ These test methods are under the jurisdiction of ASTM Committee E15 on Industrial and Specialty Chemicals and are the direct responsibility of Subcommittee E15.02 on Product Standards.

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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.

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E60 Practice for Analysis of Metals, Ores, and Related Materials by Spectrophotometry

E70 Test Method for pH of Aqueous Solutions With the Glass Electrode

E145 Specification for Gravity-Convection and Forced-Ventilation Ovens

E180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial and Specialty Chemicals (Withdrawn 2009)³

E200 Practice for Preparation, Standardization, and Storage of Standard and Reagent Solutions for Chemical Analysis

E300 Practice for Sampling Industrial Chemicals

3. Significance and Use

3.1 Soda ash is used in a number of manufacturing processes. The procedures listed in 1.2 are suitable for specification acceptance and manufacturing control of commercial soda ash.

4. Apparatus

4.1 *Photometers and Photometric Practice*—Photometers and photometric practice used in these test methods shall conform to Practice E60.

4.2 *pH Meters*—pH meters and their use shall conform to Test Method E70.

4.3 *Buret*—A calibrated 50-mL buret, or any standard 50-mL buret calibrated by either the National Institute of Standards and Technology or by the user. Alternatively, a 100-mL calibrated buret with a 50-mL bulb at the top and a 50-mL stem below may be used.

5. Purity of Reagents and Water

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,

³ The last approved version of this historical standard is referenced on www.astm.org.

*A Summary of Changes section appears at the end of this standard