



# Standard Practice for Preparation, Standardization, and Storage of Standard and Reagent Solutions for Chemical Analysis<sup>1</sup>

This standard is issued under the fixed designation E200; 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 ( $\epsilon$ ) 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 This practice covers procedures for the preparation, standardization, and storage of the standard volumetric solutions and reagent testing solutions commonly used in chemical analysis.

1.2 The information in this practice is arranged as follows:

|                                                               | Sections |
|---------------------------------------------------------------|----------|
| Referenced Documents                                          | 2        |
| Terminology                                                   | 3        |
| Significance and Use                                          | 4        |
| Apparatus                                                     | 5        |
| Temperature effects                                           | 6        |
| Measurements                                                  | 7        |
| Reagents                                                      | 8        |
| Concentration of solutions                                    | 9        |
| Mixing of solutions                                           | 10       |
| Storage of solutions                                          | 11       |
| Preparation and standardization of solutions                  | 12       |
| Precision and Bias                                            | 13       |
| Sodium hydroxide solution, 0.02 to 1.0 meq/mL (N)             | 14 to 19 |
| Hydrochloric acid, 0.02 to 1.0 meq/mL (N)                     | 20 to 28 |
| Sulfuric acid, 0.02 to 1.0 meq/mL (N)                         | 29 to 33 |
| Hydrochloric acid, special 1 meq/mL (N)                       | 34 to 38 |
| Sulfuric acid, special 1 meq/mL (N)                           | 39 to 43 |
| Silver nitrate solution, 0.1 meq/mL (N)                       | 44 to 48 |
| Ammonium thiocyanate solution, 0.1 meq/mL (N)                 | 49 to 53 |
| Iodine solution, 0.1 meq/mL (N)                               | 54 to 58 |
| Sodium thiosulfate solution, 0.1 meq/mL (N)                   | 59 to 63 |
| Potassium permanganate solution, 0.1 meq/mL (N)               | 64 to 68 |
| Potassium dichromate solution, 0.1 meq/mL (N)                 | 69 to 73 |
| Methanolic sodium hydroxide solution, 0.5 meq/mL (N)          | 74 to 79 |
| Ceric sulfate solution, 0.1 meq/mL (N)                        | 80 to 84 |
| Acetous perchloric acid, 0.1 meq/mL (N)                       | 85 to 89 |
| Disodium ethylenediaminetetraacetate solution, 0.05 mol/L (M) | 90 to 94 |
| Standard ion solutions                                        | 95       |
| Nonstandardized reagent solutions and indicator solutions     | 96       |

1.3 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

1.4 *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 warning statements are given throughout this practice.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

D1193 Specification for Reagent Water

E50 Practices for Apparatus, Reagents, and Safety Considerations for Chemical Analysis of Metals, Ores, and Related Materials

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

E203 Test Method for Water Using Volumetric Karl Fischer Titration

E694 Specification for Laboratory Glass Volumetric Apparatus

### 2.2 Other Document:<sup>4</sup>

Reagent Chemicals American Chemical Society Specifications (ACS)

## 3. Terminology

### 3.1 Definitions:

3.1.1 *standard volumetric solution*—a solution of accurately determined concentration used in the quantitative analysis of chemicals and other products. The concentration of such solutions is usually expressed in terms of meq/mL (N) normality or mol/L (M) molarity.

## 4. Significance and Use

4.1 The accuracy of many analytical measurements is dependent upon the manner in which the standard solutions are

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.15 on Industrial and Specialty General Standards.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

<sup>4</sup> Available from American Chemical Society (ACS), 1155 Sixteenth St., NW, Washington, DC 20036, <http://www.acs.org>.