



Designation: D891 – 24

Standard Test Methods for Specific Gravity, Apparent, of Liquid Industrial Chemicals¹

This standard is issued under the fixed designation D891; 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 determination of the specific gravity, apparent, of liquid industrial chemicals. Two test methods are covered as follows:

1.1.1 *Test Method A*, specific gravity, apparent, by means of a hydrometer.

1.1.2 *Test Method B*, specific gravity, apparent, by means of a pycnometer.

NOTE 1—Test Method D4052 describes an instrumental procedure.

1.2 In common usage the term specific gravity, apparent, is understood to mean specific gravity or relative density.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in these test methods with the exception of Fahrenheit (°F) in 5.1 as an example of a possible industrial specification unit.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. Consult current OSHA regulations, suppliers' Safety Data Sheets, and local regulations for all materials used in this specification.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- D1193 Specification for Reagent Water
- D4052 Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter
- D6809 Guide for Quality Control and Quality Assurance Procedures for Aromatic Hydrocarbons and Related Materials
- E1 Specification for ASTM Liquid-in-Glass Thermometers
- E100 Specification for ASTM Hydrometers
- E202 Test Methods for Analysis of Ethylene Glycols and Propylene Glycols
- E302 Test Methods for Monobasic Organic Acids (Withdrawn 2001)³
- E346 Test Method for Analysis of Carbonizables in Methanol

2.2 Other Document:⁴

- OSHA Regulations, 29 CFR paragraphs 1910.1000 and 1910.1200

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *specific gravity, apparent*—the ratio of the weight in air of a unit volume of a material at a stated temperature to the weight in air of equal density of an equal volume of gas-free distilled water (see Note 2) at a stated temperature. Specific gravity is also referred to as relative density. It shall be stated as follows:

$$\text{Specific gravity, apparent, } x/y \text{ } ^\circ\text{C} \quad (1)$$

where x is the temperature of the material and y is the temperature of the water.

NOTE 2—Gas-free distilled water is distilled water that has been boiled

¹ These test methods are under the jurisdiction of ASTM Committee D16 on Aromatic, Industrial, Specialty and Related Chemicals and are the direct responsibility of Subcommittee D16.04 on Instrumental Analysis.

Current edition approved Aug. 1, 2024. Published August 2024. Originally approved in 1946. Last previous edition approved in 2018 as D891 – 18. DOI: 10.1520/D0891-24.

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

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

⁴ Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, <http://www.access.gpo.gov>.

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