



Standard Specification for Polyethylene Upright Storage Tanks¹

This standard is issued under the fixed designation D 1998; 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.

1. Scope *

1.1 This specification covers flat-bottom, upright, cylindrical tanks molded in one-piece seamless construction by rotational molding. The tanks are molded from polyethylene for above-ground, vertical installation and are capable of containing aggressive chemicals at atmospheric pressure. Included are requirements for materials, properties, design, construction, dimensions, tolerances, workmanship and appearance. Tank capacities are from 1900 L (500 gal) up.

1.2 This specification does not cover the design of vessels intended for use at pressures other than atmospheric pressure. Furthermore, this specification does not cover the design of portable tanks. It is also not for vessels intended for use with liquids heated above their flash points, or temperatures above 66°C (150°F) for Type I tanks and 60°C (140°F) for Type II tanks for continuous service. *NFPA Standards 30 and 31 should be consulted for installations which may be subject to the requirements of these standards.*

1.3 Special design considerations not covered in this specification should be given to vessels subject to superimposed mechanical forces, such as seismic forces, windload or agitation; to vessels subject to service temperature in excess of 23°C (73.4°F); and vessels subject to superimposed pressure exceeding 25.4 cm (10 in.) of water or 2.5×10^{-3} MPa (0.36 psi).

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

NOTE 1—There is no similar or equivalent ISO standard.

1.5 The following precautionary caveat pertains only to the test methods portion, Section 11, of this specification: *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 618 Practice for Conditioning Plastics and Electrical Insulating Materials for Testing²
- D 883 Terminology Relating to Plastics²
- D 1693 Test Method for Environmental Stress-Cracking of Ethylene Plastics²
- D 2837 Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials³
- D 3892 Practice for Packaging/Packing of Plastics⁴
- D 4703 Practice for Compression Molding Thermoplastic Materials into Test Specimens, Plaques, or Sheets⁵
- E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁶
- F 412 Terminology Relating to Plastic Piping Systems³
- 2.2 OSHA Standard:
 - 29 CFR 1910.106 Occupational Safety and Health Administration, Flammable and Combustible Liquids⁷
- 2.3 ANSI Standard:
 - B-16.5 Pipe Flanges and Flanged Fittings⁸
- 2.4 NFPA Standards:
 - 30 Flammable and Combustible Liquid Code⁹
 - 31 Installation of Oil Burning Equipment⁹

3. Terminology

3.1 *Definitions:* Definitions are in accordance with Terminologies D 883 and F 412 and the Association of Rotational Molders (ARM) Glossary of Terms,¹⁰ unless otherwise indicated.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *impact failure, n*—any crack in the test specimen resulting from the impact and visible in normal room lighting to a person with normal eyesight.

3.2.2 *rotational molding, n*—a three-stage commercial process consisting of loading the mold with powdered resin,

² Annual Book of ASTM Standards, Vol 08.01.

³ Annual Book of ASTM Standards, Vol 08.04.

⁴ Annual Book of ASTM Standards, Vol 08.02.

⁵ Annual Book of ASTM Standards, Vol 08.03.

⁶ Annual Book of ASTM Standards, Vol 14.02.

⁷ Available from OSHA, 2900 Newton St., NE, Washington, DC 20018.

⁸ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

⁹ Available from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

¹⁰ Available from Association of Rotational Molders, 435 North Michigan Ave., Suite 1717, Chicago, IL 60611-4067.

¹ This specification is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.12 on Olefin Plastics.

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