



Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents¹

This standard is issued under the fixed designation D543; 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 practices cover the evaluation of all plastic materials including cast, hot-molded, cold-molded, laminated resinous products, and sheet materials for resistance to chemical reagents. These practices include provisions for reporting changes in weight, dimensions, appearance, and strength properties. Standard reagents are specified to establish results on a comparable basis. Provisions are made for various exposure times, stress conditions, and exposure to reagents at elevated temperatures. The type of conditioning (immersion or wet patch) depends upon the end-use of the material. If used as a container or transfer line, immerse the specimens. If the material will only see short exposures or will be used in proximity and reagent will splash or spill on the material, use the wet patch method of applying reagent.

1.2 The effect of chemical reagents on other properties shall be determined by making measurements on standard specimens for such tests before and after immersion or stress, or both, if so tested.

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 hazards statements are given in Section 7.

NOTE 1—This standard and ISO 22088 Part 3 address the same subject matter, but differ in technical content (and the results cannot be directly compared between the two test methods).

¹ These practices are under the jurisdiction of ASTM Committee D20 on Plastics and are the direct responsibility of Subcommittee D20.50 on Durability of Plastics.

Current edition approved Nov. 1, 2014. Published November 2014. Originally approved in 1939. Last previous edition approved in 2006 as D543 - 06. DOI: 10.1520/D0543-14.

2. Referenced Documents

2.1 ASTM Standards:²

D13 Specification for Spirits of Turpentine

D396 Specification for Fuel Oils

D618 Practice for Conditioning Plastics for Testing

D883 Terminology Relating to Plastics

D1040 Specification for Uninhibited Mineral Insulating Oil for Use in Transformers and in Oil Circuit Breakers (Withdrawn 1980)³

D1898 Practice for Sampling of Plastics (Withdrawn 1998)³

D5947 Test Methods for Physical Dimensions of Solid Plastics Specimens

2.2 Military Specifications:⁴

MIL-A-11755 Antifreeze, Arctic-Type

MIL-A-46153 Antifreeze, Ethylene Glycol, Inhibited, Heavy Duty, Single Package

MIL-C-372 Cleaning Compound, Solvent (For Bore of Small Arms and Automatic Aircraft Weapons)

MIL-D-12468 Decontaminating Agent, STB

MIL-D-50030 Decontaminating Agent, DS2

MIL-F-46162 Fuel, Diesel, Referee Grade

MIL-G-5572 Gasoline, Aviation, Grades 80/87, 100/130, 115/145

MIL-H-5606 Hydraulic Fluid, Petroleum Base, Aircraft, Missiles, and Ordinance

MIL-H-6083 Hydraulic Fluid, Petroleum Base, for Preservation and Operation

MIL-H-83283 Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft

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

⁴ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://dodssp.daps.dla.mil>.