



Designation: D7539 – 10 (Reapproved 2020)

Standard Practice for Using a Test Chamber for Humidity Conditioning of Test Panels of Pavement Marking Paints¹

This standard is issued under the fixed designation D7539; 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 Specification **D3924** defines a standard environment of $23 \pm 2^\circ\text{C}$ and $50 \pm 5\%$ relative humidity and free from drafts for normal conditioning and testing of paint, varnish, lacquer, and related materials. This practice describes a test chamber that allows for control of relative humidity above the ambient relative humidity and minimization of air flow for conditioning of test panels at elevated relative humidity and room temperatures.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *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.*

1.4 *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

D711 Test Method for No-Pick-Up Time of Traffic Paint
D1640 Test Methods for Drying, Curing, or Film Formation of Organic Coatings
D3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials

¹ This practice is under the jurisdiction of ASTM Committee **D01** on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee **D01.44** on Traffic Coatings.

Current edition approved June 1, 2020. Published July 2020. Originally approved in 2010. Last previous edition approved in 2015 as D7539 – 10 (2015). DOI: 10.1520/D7539-10R20.

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.

D7377 Practice for Evaluating the Water Wash-Off Resistance of Traffic Paints using a Water Faucet

D7538 Practice for Evaluating the Water Wash-Off Resistance of Traffic Paints Using an Atomizing Spray Device

2.2 *Other Standard:*³

TT-P-1952E Federal Specification for Paint, Traffic and Airfield Marking, Waterborne (10 July 2007)

3. Terminology

3.1 *Definitions:*

3.1.1 *test chamber, n*—a cabinet or box, preferably made of transparent, waterproof material, such as clear acrylic plastic, with panel supports and holes (ports) that can be partially to fully opened to mix outside ambient air with humidified air in the chamber or some other means to provide humidified air with minimal air flow.

3.1.1.1 *Discussion*—Also commonly referred to as a humidity box or humidity chamber, as in Federal Specification TT-P-1952E.

3.1.2 *waterborne pavement marking (traffic) paint, n*—an aqueous paint used for marking pavements.

4. Summary of Practice

4.1 A test chamber is described that allows for the control of relative humidity above ambient relative humidity and the minimization of air flow variability at ambient room temperatures.

5. Significance and Use

5.1 The drying rate of organic coatings varies with changes in temperature, air flow, and relative humidity. In particular, the drying rate of waterborne paints depends on the evaporation of water and thus is much more dependent on relative humidity than are solvent based paints or paints that are 100 % solids. Measurement of the rate of drying of waterborne paints under ambient conditions in laboratories cannot be adequately replicated without some control of the drying conditions. A test chamber will be described that provides a means of controlling

³ Available from General Services Administration, Federal Supply Service, Specification Section, Suite 8100, 470 L'Enfant Plaza, SW, Washington DC 20407, <http://www.gsa.gov>.