



Standard Test Method for Determination of Volatile Organic Compounds Emitted from Carpet using a Specific Sorbent Tube and Thermal Desorption / Gas Chromatography¹

This standard is issued under the fixed designation D7339; 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 test method describes an analytical procedure for identifying and quantifying the masses of individual volatile organic compounds (individual VOCs or IVOCs) that are emitted into a flow of air from carpet specimens and collected on sorbent sampling tubes during emissions testing.

1.2 This test method will be used in conjunction with a standard practice for sampling and preparing carpet specimens for emissions testing. If a specific chamber practice is not available for the carpet specimens, this standard test method should be used in conjunction with approved standard practices for emissions testing and sample preparation.

1.3 When used in conjunction with standard practices for carpet specimen preparation and collection of vapor-phase emissions, this test method will provide a standardized means of determining the levels of IVOC in the exhaust stream of the emissions test chamber/cell. If this test method is used with a reliable practice for emissions testing, these IVOC levels can be used to determine the emission rate from a unit quantity (usually surface area) of the sample material under test.

1.4 VOCs in the exhaust stream of an emissions test device are collected on thermal desorption tubes packed with a specific combination of sorbents using active (pumped) sampling. (See Practice [D6196](#) for a more general description of vapor collection using pumped sampling onto sorbent tubes). The samples are analyzed by thermal desorption (TD) with gas chromatography and mass spectrometry detection (GC/MS) and/or flame ionization detection (FID) depending upon the requirements of the specific materials emissions testing/certification protocol.

1.5 This test method can be used for the measurement of most GC-compatible organic vapors ranging from the approximate volatility from *n*-hexane to *n*-hexadecane (that is, compounds with vapor pressures ranging from 16 kPa to 4×10^{-4}

kPa at 25°C). Properties other than a compound's vapor pressure such as affinity for the sorbent may need to be taken into account. Compounds with vapor pressures outside this range may or may not be quantifiable by this method. However, qualitative data concerning the identity of a compound(s), outside the stated volatility range for quantitation, may still be useful to the user. The method can be applied to analytes over a wide concentration range—typically $1 \mu\text{g}/\text{m}^3$ to $1 \text{ mg}/\text{m}^3$ concentration of vapor in the exhaust air from the emission cell or chamber.

1.6 *This test method is not capable of quantifying all compounds which are emitted from carpets. See the appropriate test practices/methods for determining other compounds that are not amenable to analysis by gas chromatography (that is, Test Method [D5197](#) for the determination of aldehydes).*

1.7 **Units**—The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.8 *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:²

[D1356 Terminology Relating to Sampling and Analysis of Atmospheres](#)

[D3686 Practice for Sampling Atmospheres to Collect Organic Compound Vapors \(Activated Charcoal Tube Adsorption Method\)](#)

[D5116 Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products](#)

[D5197 Test Method for Determination of Formaldehyde and](#)

¹ This test method is under the jurisdiction of ASTM Committee [D22](#) on Air Quality and is the direct responsibility of Subcommittee [D22.05](#) on Indoor Air.

Current edition approved Oct. 15, 2012. Published November 2012. Originally approved in 2007. Last previous edition approved in 2007 as D7339 – 07. DOI:10.1520/D7339-12.

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.