Designation: D7706 – 11

Standard Practice for Rapid Screening of VOC Emissions from Products Using Micro-Scale Chambers[1]

This standard is issued under the fixed designation D7706; 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 practice describes a micro-scale chamber apparatus and associated procedures for rapidly screening materials and products for their vapor-phase emissions of volatile organic compounds (VOCs) including formaldehyde and other carbonyl compounds. It is intended to complement, not replace reference methods for measuring chemical emissions for example, small-scale chamber tests (Guide D5116) and emission cell tests (Practice D7143).

1.2 This practice is suitable for use in and outside of laboratories, in manufacturing sites and in field locations with access to electrical power.

1.3 Compatible material/product types that may be tested in the micro-scale chamber apparatus include rigid materials, dried or cured paints and coatings, compressible products, and small, irregularly-shaped components such as polymer beads.

1.4 This practice describes tests to correlate emission results obtained from the micro-scale chamber with results obtained from VOC emission reference methods (for example, Guide D5116, Test Method D6007, Practice D7143, and ISO 16000-9 and ISO 16000-10).

1.5 The micro-scale chamber apparatus operates at moderately elevated temperatures, 30°C to 60°C, to eliminate the need for cooling, to reduce test times, boost emission rates, and enhance analytical signals for routine emission screening, and to facilitate screening of semi-volatile VOC (SVOC) emissions such as emissions of some phthalate esters and other plasticizers.

1.6 Gas sample collection and chemical analysis are dependent upon the nature of the VOCs targeted and are beyond the scope of this practice. However, the procedures described in Test Method D7339, Practice D6196 and ISO 16000-6 for analysis of VOCs and in Test Method D5197 and ISO 16000-3 for analysis of formaldehyde and other carbonyl compounds are applicable to this practice.

1.7 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

D1914 Practice for Conversion Units and Factors Relating to Sampling and Analysis of Atmospheres

D5116 Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products

D5197 Test Method for Determination of Formaldehyde and Other Carbonyl Compounds in Air (Active Sampler Methodology)

D6007 Test Method for Determining Formaldehyde Concentrations in Air from Wood Products Using a Small-Scale Chamber

D6196 Practice for Selection of Sorbents, Sampling, and Thermal Desorption Analysis Procedures for Volatile Organic Compounds in Air

D5337 Practice for Flow Rate Adjustment of Personal Sampling Pumps

D7143 Practice for Emission Cells for the Determination of Volatile Organic Emissions from Indoor Materials/Products

D7339 Test Method for Determination of Volatile Organic Compounds Emitted from Carpet using a Specific Sorbent Tube and Thermal Desorption / Gas Chromatography

[1] This practice is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.05 on Indoor Air.

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[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.

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