



Designation: D6178 – 19 (Reapproved 2024)

Standard Practice for Estimation of Short-Term Inhalation Exposure to Volatile Organic Chemicals Emitted from Bedding Sets¹

This standard is issued under the fixed designation D6178; 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 the procedures for estimation of short-term human inhalation exposure to volatile organic compounds (VOCs) emitted from bedding sets when a new bedding set is first brought into a bedroom.

1.2 The estimated exposure is based on an estimated emission profile of VOCs from bedding sets.

1.3 The VOC emission from bedding sets, as in the case of other household furnishings, usually are highest when the products are new. Procedures described in this practice are applicable to both new and used bedding sets.

1.4 Exposure to airborne VOC emissions in a residence is estimated for a household member, based on location and activity patterns.

1.5 The estimated exposure may be used for characterization of health risks that could result from short-term exposures to VOC emissions.

1.6 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.7 *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.*

1.8 *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

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

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

D5157 Guide for Statistical Evaluation of Indoor Air Quality Models

D6177 Practice for Determining Emission Profiles of Volatile Organic Chemicals Emitted from Bedding Sets

D6670 Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products

3. Terminology

3.1 *Definitions*—For definitions and terms used in this practice, refer to Terminology **D1356**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *bedding set, n*—an ensemble that includes a mattress for sleeping and a supporting box spring.

3.2.2 *emission profile, n*—a time-series of emission rates of one or more compounds.

3.2.3 *exposure scenario, n*—a description of how and where an estimated exposure occurs, including (1) the location and emission profile of the product or material that causes exposure, (2) the indoor environment where the individual is exposed to airborne emissions from the product or material, and (3) the location and activity patterns of the exposed individual.

3.2.4 *potential inhaled dose, n*—the product of air concentration to which an individual is exposed multiplied by the breathing rate times duration of exposure.

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 www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.