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.

Designation: D7143 – 17

Standard Practice for Emission Cells for the Determination of Volatile Organic Emissions from Indoor Materials/Products[1]

This standard is issued under the fixed designation D7143; 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.

INTRODUCTION

This practice complements Guide D5116 and Practice D6670.

1. Scope

1.1 This practice is intended for determining volatile organic compound (VOC) emissions from materials and products using emission cells. It can be applied in principle to most construction materials and many products used indoors. Objectives include:

1.1.1 To provide manufacturers, builders, and end users with emission data useful for evaluating the impact of building products, new or old, on indoor air concentrations in a model room.

1.1.2 To promote the development of products with lower VOC emissions.

1.2 This practice is for identifying emitted VOCs and for determining the area specific emission rate of VOCs from newly produced building products under defined climate conditions. The method can also be applied to aged products.

1.3 In accordance with the definition of an emission cell, it is also possible to perform nondestructive emission measurements on building products on-site in buildings. However, the procedure for such measurements is not described in this practice.

1.4 This practice describes the design, construction, performance evaluation and use of emission cells for VOC emission testing. Sampling, transport and storage of materials to be tested, and preparation of test specimens are also described.

1.5 Air sampling and analytical methods for the determination of VOCs are described in Practice D6196. Alternative sampling and analytical approaches for formaldehyde and other carbonyls are described in Test Method D5197.

NOTE 1—All volatile (vapor-phase) carbonyls except formaldehyde can be analyzed by either Practice D6196 or by Test Method D5197.

NOTE 2—Direct-reading instruments can also be applied for specific objectives.

NOTE 3—Some volatile inorganic compounds can, in principle, also be analyzed (for example, ammonia).

1.6 An example of an emission cell is described in Appendix X2 of 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 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

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)

D5337 Practice for Flow Rate Adjustment of Personal Sampling Pumps

D6196 Practice for Choosing Sorbents, Sampling Parameters and Thermal Desorption Analytical Conditions for Monitoring Volatile Organic Chemicals in Air

[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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