



SURFACE VEHICLE RECOMMENDED PRACTICE

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(R) Handling, Packaging, and Conditioning of Materials and Components
Used in Automotive Interiors for Emissions Testing

RATIONALE

Many emissions testing procedures are in use for automotive interior materials, developed by OEMs, consensus standards organizations, as well as industry and government agencies. Terminology and the degree of detail in these testing protocols is often ambiguous and varies widely, particularly in regard to sample handling and packaging.

As part of the Five-Year Review, several steps were clarified to reduce ambiguity, and several definitions were updated and revised to current industry standards. Sample size requirements were specified for polyurethane foams along with updated aging and conditioning specifications. The revised document also includes new temperature, shipping, and transport requirements along with a chain of custody and a checklist for producers and laboratories.

FOREWORD

Emissions of volatile organic compounds (VOCs) from materials or components used in automotive interiors are measured by various analytical methods that may utilize heated test chambers, bags, or thermal extraction. Prior to conducting the emission tests, the improper handling and packaging of the materials can compromise the samples leading to erroneous results.

INTRODUCTION

This SAE Recommended Practice is a high-level and general guide for suppliers and testing laboratories for the selection, packaging, labeling, storage, transportation, preparation, and conditioning for, but not limited to, VOC testing, fogging testing, and odor testing.

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1. SCOPE

This SAE Recommended Practice is intended for stakeholders of the automotive industry that are conducting emission testing on materials, parts, or components used in automotive interiors. Testing methods may specifically define the handling and packaging conditions for the material to be analyzed. In these cases, follow the method as closely as possible. Use this document as a guide where the protocol for handling and packaging the samples between production and testing may be undefined or ambiguous.

1.1 Purpose

This SAE Recommended Practice pays special attention to materials sensitive to contamination or rapid volatilization of emissions in order to achieve repeatable and accurate emission test results. Contamination after production of these samples must be avoided, as these methods are highly sensitive and the materials to be investigated often have a low emission potential. Use this document as a general guide or when there is ambiguity in the test methods.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 ISO Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ISO 12219-3	Interior air of road vehicles - Part 3: Screening method for the determination of the emissions of volatile organic compounds from vehicle interior parts and materials - Micro-scale chamber method
ISO 12219-4	Interior air of road vehicles - Part 4: Method for the determination of the emissions of volatile organic compounds from vehicle interior parts and materials - Small chamber method
ISO 16000-3	Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor and test chamber air - Active sampling method
ISO 16000-6	Indoor air - Part 6: Determination of organic compounds (VVOC, VOC, SVOC) in indoor and test chamber air by active sampling on sorbent tubes, thermal desorption and gas chromatography using MS or MS FID

2.1.2 VDA Publications

Copies of these documents are available online at <https://vda-qmc.de/en>.

VDA 276	Determination of Organic Substances as Emitted from Automotive Interior Products Using a 1 m ³ Test Chamber
VDA 278	Thermal Desorption Analysis of Organic Emissions for Characterization of Non-Metallic Materials for Automobiles

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1351 Hot Odor Test for Materials Used in Vehicle Interior Cabins

SAE J1756 Determination of the Fogging Characteristics of Interior Automotive Materials

2.2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

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

ASTM D2369 Standard Practice for Volatile Content of Coatings

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

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

ASTM D4849 Standard Guide for Sample Chain-of-Custody Procedures

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

ASTM D7706 Standard Practice for Rapid Screening of VOC Emissions from Products Using Micro-Scale Chambers

2.2.3 European Standard (EN) Publications

Copies of these documents are available online at <https://www.en-standard.eu/>.

EN 717-1 Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method

EN 717-2 Wood-based panels - Determination of formaldehyde release - Formaldehyde release by the gas analysis method

EN 717-3 Wood-based panels - Determination of formaldehyde release - Formaldehyde release by the flask method

EN 13999 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Determination of volatile diisocyanates

2.2.4 ISO Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ISO 12219-2 Interior air of road vehicles - Part 2: Screening method for the determination of the emissions of volatile organic compounds from vehicle interior parts and materials - Bag method

ISO 12219-5 Indoor air of road vehicles - Part 5: Screening method for the determination of the emissions of volatile organic compounds from vehicle interior parts and materials - Static chamber method

ISO 12219-6	Interior air of road vehicles - Part 6: Method for the determination of the emissions of semi-volatile organic compounds from vehicle interior parts and materials at higher temperature - Small chamber method
ISO 12219-9	Interior air of road vehicles - Part 9: Determination of the emissions of volatile organic compounds from vehicle interior parts - Large bag method
ISO 16000-9	Indoor air - Part 9: Determination of the emission of volatile organic compounds from samples of building products and furnishing - Emission test chamber method
ISO 16000-10	Indoor air - Part 10: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test cell method
ISO 16000-11	Indoor air - Part 11: Determination of the emission of volatile organic compounds from samples of building products and furnishing - Sampling, storage of samples and preparation of test specimens
ISO 16000-24	Indoor air - Part 24: Performance test for evaluating the reduction of volatile organic compound concentrations by sorptive building materials
ISO 16000-25	Indoor air - Part 25: Determination of the emission of semi-volatile organic compounds by building products - Micro-chamber method

2.2.5 JIS Publications

Copies of these documents are available online at <https://webdesk.jsa.or.jp/books/W11M0010>.

JIS A1901	Determination of the emission of volatile organic compounds and aldehydes for building products - Small chamber method
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2.2.6 VDA Publications

Copies of these documents are available online at <https://vda-qmc.de/en>.

VDA 270	Determination of the Odour Characteristics of Trim Materials in Motor Vehicles
VDA 275	Formaldehyde Release by Modified Flask/UV Vis Spec Method
VDA 277	VOC Analysis by Headspace GC

3. DEFINITIONS

3.1 ANALYTICAL AIR EMISSIONS SAMPLE

This is the air emissions sample that is collected on sorbent tubes or cartridges during the emissions test procedure. When determining volatile organic emissions, typically, air samples are taken at selected times during the test procedure. Other methods like fogging or odor may have results without need for analytical air emissions samples and post analyses.

3.2 COATING MATERIAL

Materials that are applied at the vehicle assembly plant. If the supplier is asked to prepare samples of a coating material, the samples should be prepared using the same coating procedure and coating thickness that is used on the vehicle.

3.3 COMBINED MATERIAL

Nonhomogeneous assemblies of solid and/or liquid materials. Components are often terms used to describe combined materials. Special care should be given to combined materials so the sample is as close to the final assembly as possible.