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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

Air intérieur des véhicules routiers —

Partie 6: Méthode pour la détermination des émissions de composés organiques semi-volatils des parties et matériaux intérieurs des véhicules à des températures élevées — Méthode de la petit chambre

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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The committee responsible for this document is Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 6, *Indoor air*.

A list of all the parts in the ISO 12219 can be found on the ISO website.

Introduction

Volatile and semi-volatile organic compounds (VOCs and SVOCs) are widely used in industry and can be emitted by many everyday products and materials. They have attracted attention in recent years because of their impact on indoor air quality. After homes and workplaces, people spend a lot of time in their vehicles. It is important to determine the material emissions of interior parts and to reduce them to an acceptable level, if required. Therefore, it is necessary to obtain comprehensive and reliable information about the types of organic compounds in the interior air of vehicles and also their concentrations.

Monitoring emissions from vehicle trim components can be performed in several ways and the approach selected depends upon the desired outcome and the material type. For example, to obtain emissions data from complete assemblies (e.g. a dashboard or seat), it is necessary to employ emission chambers or bags that have sufficient volume to house the complete assembly (typically ≥ 1 m^3). The performance of such tests may take several hours or even days, depending on specified equilibration times and the requirements of the relevant test protocol.

This document outlines a screening method for measuring the types and levels of VOCs and SVOCs in vehicle trim components under controlled conditions using a small emission test chamber (small chamber). The described screening method can be used to investigate the emissions of car interior trim under conditions of real use where elevated temperatures are prevailing in the cabin of road vehicles. For this purpose, tests are performed at 65 °C and 100 °C. ISO 12219-6 describes requirements for a small chamber and a test protocol. Measurements are carried out according to ISO 16000-6 (VOCs).

The capacity of a small chamber is not limited to small assemblies or representative test specimens of homogeneous car trim materials. Small chambers allow qualitative and quantitative VOC and SVOC emission data to be measured and recorded. The subsequent emission data can be used to develop a correlation between material level methods and the vehicle level method.

This document is based on VDA 276[2] and correlates to ISO 16000-9.

Besides the ISO 12219-series, there are parts of ISO 16000 which deal with the measurements of vapour-phase organic chemicals and vapour-phase chemical emissions:

— *Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air — Active sampling method*

— *Part 5: Sampling strategy for volatile organic compounds (VOCs)*

— *Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas-chromatography using MS or MS-FID*

— *Part 9: Determination of the emission of volatile organic compounds from building products and furnishing — Emission test chamber method*

— *Part 10: Determination of the emission of volatile organic compounds from building products and furnishing — Emission test cell metho*d

— *Part 11: Determination of the emission of volatile organic compounds from building products and furnishing — Sampling, storage of samples and preparation of test specimens*

— *Part 24: Performance test for evaluating the reduction of volatile organic compound (except formaldehyde) concentrations by sorptive building materials*

— *Part 25: Determination of the emission of semi-volatile organic compounds for building products — Micro chamber method*