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Ambient air — Determination of particle-phase polycyclic aromatic hydrocarbons by high performance liquid chromatography

Air ambiant — Détermination des particules d'hydrocarbures aromatiques polycycliques par chromatographie liquide à haute performance



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Foreword

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ISO 16362 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 3, *Ambient atmospheres*.

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Introduction

Several polycyclic aromatic hydrocarbons (PAHs) are considered to be potential human carcinogens. PAHs are emitted into the atmosphere primarily through combustion of fossil fuel and wood. Two- and three-ring PAHs are typically present in urban air at concentrations ranging from ten to several hundred nanograms per cubic metre (ng/m^3); those with four or more rings are usually found at concentrations of a few nanograms per cubic metre or lower. PAHs possess saturation vapour pressures at 25 °C that range from 10^{-2} kPa to less than 10^{-13} kPa. Those with vapour pressures above 10^{-8} kPa may be substantially distributed between the gas phase and particle-associated (particulate) phase in the atmosphere. The distribution between phases depends on ambient temperature, humidity, types and concentrations of PAHs and particulate matter, and residence time in the air. PAHs, especially those having vapour pressures above 10^{-8} kPa, tend to vaporize from particle filters during sampling.

This International Standard allows the determination of low volatility, particle-bound PAHs, in contrast to ISO 12884^[1] which allows the measurement of PAHs in the gas phase. This International Standard allows the use of a range of sampler flowrates, and requires the use of high performance liquid chromatography (HPLC) with the detection carried out by either fluorescence detection or UV absorption.