

ICS 65.160
CCS X 85



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 21133-2007

**Environmental tobacco smoke -- Estimation of its contribution
to respirable suspended particles -- Method based on solanesol**

环境烟草烟气 可吸入悬浮颗粒物的估测 茄呢醇法

(English Translation)

Issued on: October 16, 2007

Implemented on: January 1, 2008

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, Standardization
Administration of the People's Republic of China**

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Foreword

This standard is equivalent to using the international standard ISO 18144.:2003 "Environmental tobacco smoke respirable suspended particles of solanesol Act (English version). This standard is equivalent in technical content with ISO 18144.:2003.

Appendix A of this standard is an informative annex.

This standard proposed by the State Tobacco Monopoly Bureau.

This standard by the National Tobacco Standardization Technical Committee (TC144) centralized.

This standard was drafted. National Tobacco Quality Supervision and Inspection Center.

Introduction

Environmental tobacco smoke (ETS) is an aerosol of gas and particulate matter. Due to the nature of the gas phase and particulate matter on the poor Different, resulting in a lack of correlation between the two, and thus an accurate assessment of indoor air environment levels of tobacco smoke need to determine the two-phase are suitable A Among all the conditions that an ideal environment tobacco smoke marker should have, the most critical one is that the environmental conditions are within a certain range the mark must be fairly stable in relation to a contaminant or a type of contaminant such as suspended particulates (see reference text Offer [1]).

Note: Bibliography lists all references cited.

Solanesol, a C45 isoprenoid alcohol, was found to be associated with respirable suspended particulate matter (VOC) of tobacco smoke at various aeration conditions and sampling times to maintain a constant proportional relationship (see reference [2]), so to meet this requirement. According to ISO 15593 Determination of the UV particles and Fluorescent grain phases are likewise the markers or markers that satisfy this requirement (see

Reference [3]). But the unique characteristics of solanesol in the atmosphere it is peculiar to tobacco smoke and exists only in the particulate phase of ambient tobacco smoke.

Solanesol's high molecular weight and low volatility do not may be missing from the sample collection membrane. Solanesol accounts for about 3% of the total mass of respirable suspended particulate matter in environmental tobacco smoke (see references [4] to [6]). Such high levels are suitable for the measurement under the prevailing smoking prevalence rate. Tobacco smoke in available environment Among the aerosol markers (UV-grainy, fluorescent and solanesol), three are currently used and can be relied on, while solanesol is considered is a good marker for the environmental tobacco smoke particulate matter and is therefore also an assessment of environmental tobacco smoke particulates on respirable suspended particles the best way to quantify the influence of matter (see references [7] ~ [15]).

Since respirable suspended particulates are not peculiar to tobacco fumes, tobacco smoke is quantified with tobacco-specific markers for absorbable the impact of suspended particles is very important. Respirable suspended particulate matter is a very necessary measure of the overall air quality, the U.S. Occupational Safety and Health Administration (OSHA) mandated that the maximum allowable level of inhalable dust in the workplace is 5000 $\mu\text{g}/\text{m}^3$. Of course However, there are many sources of respirable suspended particulates (see reference [16]), which have proven unsuitable as markers for environmental tobacco smoke (See references [4], [17] ~ [19]). Using UV Particles and Fluorescent Particles as Markers to Estimate Environmental Tobacco Smoke to Inhalable Suspensions the impact of floating particles has a certain selectivity. However, these two markers are likely because of the potential interference with non-tobacco combustion it will overestimate the impact of ambient tobacco smoke on respirable suspended particulates. Although the UV phase and the fluorescent particles phase on the test indoor empty Gas quality is useful, but solanesol is a better marker for assessing the effects of tobacco smoke on respirable suspended solids. This standard describes Test Methods By measuring the mass ratio of solanesol to total respirable suspended particulates, the sources of ambient tobacco smoke were compared to non-ambient tobacco smoke (See references [4], [6], [10], [11], [14], [15], [20], [21]) from the source of inhalable suspended particulates.

Tobacco, one of which is tobacco, is a genus of solanaceous plants. Like tobacco, many plants in this family, especially traces Nicotinic plants, all contain solanesol. For example, tomatoes, potatoes, eggplant and pepper. Cooking is the only possible source of interference, due to this potential interference can be neglected. However, if there is such a source of interference, the amount of solanesol can be very high, and environmental tobacco smoke pairs Inhalable suspended particles affect the determination of the results will be high. It is expected that the only source of normal solanesol in the indoor environment is smoke Grass burning. In various indoor environments, solanesol concentrations ranged from undetected to 2 $\mu\text{g}/\text{m}^3$, and most of the time in this range Lower limit.

GB/T 21133-2007/ISO 18144.:2003 Estimation of Respirable Suspended Particulates in Environmental Tobacco Smoke Solanesol method

1 Scope

This standard specifies the sampling and determination methods of environmental tobacco smoke (ETS) impact assessment of Respirable Suspended Particulate Matter (RSP). This the method is suitable for both individual and regional sampling. The method and gravimetric determination of respirable suspended particulate matter quality, UV absorption and fluorescence the method for the determination of RSP in ETS by UV spectrophotometry and fluorescent particle phase determination is the same.

Note: See GB/T 21131 for details.

This standard also specifies the method of estimating the composition of respirable suspended particles in the ambient flue gas --- solanesol assay.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. All dated references, which are subsequently owned Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to reach an agreement based on this standard research Whether you can use the latest versions of these files. For undated references, the latest version applies to this standard.

GB/T 21131 Environmental tobacco smoke inhalable suspended particles - Determination of particulate matter by UV absorption and fluorescence methods (GB/T 21131-2007, ISO 15593.:2001, IDT) ISO 648 laboratory glassware single standard pipette ISO 1042 laboratory glassware monosomatous flask

3 Terms and definitions

The following terms and definitions apply to this standard.

The human body is exhausted from the mixture of aged, diluted mainstream flue gas and aged, diluted sidestream flue gas.

When using a particle size selective sampling device for capture, a capture efficiency curve with a median cutoff of 4.0 μm aerodynamic diameter particle.

Environmental tobacco smoke particulate part.

Estimates of the impact of environmental tobacco smoke particulate matter on respirable suspended particulate matter were obtained from measuring solanesol, a tobacco-specific compound.

4 Principle

A known volume of air is pumped through an inert impactor or cyclone to separate particles above 4.0 μm in size so as to be breathable the suspended particulates are separated from the total suspended particulates, then the air is passed through a filter equipped with a Teflon filter, solanesol is inhaled A component of floating particles that collects on the filter. The solanesol on the filter was extracted with methanol and the extract was injected into a UV detector GB/T 21133-2007/ISO 18144.:2003