Australian/New Zealand Standard™

Methods for sampling and analysis of ambient air

Method 10.1: Determination of particulate matter—Deposited matter—Gravimetric method

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EV-007, Methods for Examination of Air to supersede AS 3580.10.1—1991. The objective of this Standard is to provide regulatory and testing bodies with a Standard method for determining deposited matter that rapidly settles from the air.

Calibration and checks for ovens and balances used for this method should be in accordance with NATA Technical Note 12 *Measurement of temperature variation and recovery time in laboratory drying ovens: June 1991* and NATA Technical Note 13 *Users check of balance calibration: July 1995.*

AS 2922, is referenced frequently in this Standard. AS 2922 is currently being revised by Committee EV-007 and will be re-numbered and published as AS/NZS 3580.1.1. When this occurs, this Standard will be amended.

FOREWORD

Particulate matter sampled by this method is predominantly dust particles which, because of their size, rapidly settle from the air. This dust can be a nuisance by soiling property in the vicinity of its point of emission. Some common sources of such particles are minerals processing, bulk materials handling, surface mining operations, industrial processes, unsealed roads, incineration and natural causes such as wind-blown dust.

This method is used primarily to establish long term trends and to investigate localized dustfall.

This procedure has been widely used in Australia for over 40 years and, during this time, extensive data has been collected. Data collected using this method are not directly comparable with data obtained by other deposit gauge methods.

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METHOD

1 SCOPE

This Standard sets out a method for the sampling of particulate matter that is deposited from the atmosphere, and procedures for the gravimetric determination of the mass deposition rate of insoluble solids, ash, combustible matter, soluble solids and total solids from ambient air.

NOTES:

1 The sample obtained by the sampling procedure specified may be subjected to physical or chemical analysis.

2 The method provides an estimate of the mean surface concentration of deposited matter settling from the air over a sampling period, typically one month. Particulate deposition rates of 0.1 g/m^2.month and above may be determined using a monthly sampling period.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1152 Specification for test sieves

2162 Verification and use of volumetric apparatus

2162.1 Part 1: General—Volumetric glassware

2164 Laboratory glassware—One-mark volumetric flasks

2166 Laboratory glassware—One-mark pipettes

2922 Ambient air—Guide for the siting of sampling units

3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

3.1 Ash

The mass of that portion of the insoluble matter remaining after combustion.

3.2 Combustible matter

The mass of that portion of the insoluble matter lost during combustion.

3.3 Constant mass

Within ±1 mg of the previous mass.

3.4 Deposited matter

Particles which are collected in a deposit gauge (see Clause 6.2) and which pass through a 1 mm mesh sieve complying with AS 1152.

3.5 Insoluble matter

The mass of the insoluble portion of the deposited matter.

3.6 Soluble matter

The mass of the soluble portion of the deposited matter.

3.7 Total solids

The mass of the particulate matter deposited in a deposit gauge.

3.8 U95

A measurement of uncertainty at a confidence interval of 95% according to ISO GUM.