

WITHDRAWN

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## AMBIENT AIR— DETERMINATION OF GASEOUS POLLUTANTS—DEFINITIONS FOR INSTRUMENTS AND GENERAL REQUIREMENTS



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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Chemical Industry Council  
Australian Institute of Petroleum  
Australian Mining Industry Council  
Australian Timber Producers Council  
Clean Air Society of Australia and New Zealand  
Confederation of Australian Industry  
CSIRO, Division of Fossil Fuels  
Department of Home Affairs and the Environment  
Department of the Environment, Tasmania  
Electricity Supply Association of Australia  
National Association of Testing Authorities, Australia  
National Health and Medical Research Council  
State Pollution Control Commission, N.S.W.  
Technical Association of the Australian and New Zealand Pulp and Paper Industry

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## PREFACE

This standard was prepared by the Association's Committee on Methods for Examination of Air. It is one of a series of methods of test for determining pollutants in ambient air.

During the preparation of this standard, the committee paid special attention to the work of ISO/TC 146, Air Quality, and of the Environmental Protection Agency, U.S.A., particularly in the areas where methodology is still developing. Acknowledgement is made of the assistance obtained therefrom.

Methods for determining gaseous pollutants in ambient air embody a number of common features. Because of this it has been found convenient to group and present certain features in respect of definitions, apparatus, calibration, sampling, procedure, expression of results and calculation and reporting.

This standard thus constitutes a basic reference which facilitates consistency and brevity in individual methods and complements SAA MP34, Guide to the Layout and Preparation of Standard Methods of Chemical Analysis.

Not all the requirements are relevant to every method of test; deletions, additions and modifications will be necessary as appropriate.

Where appropriate, the following statement is to be included in the preface of the relevant standards:

'The requirements for the instruments specified in this standard were derived from and are substantially similar to those given in the United States Environmental Protection Agency (USEPA) Air Regulations Pollution Control Guide, Part 53—Ambient Air Monitoring Reference and Equivalent Methods, Section 8183, Subpart B—Procedures for Testing Performance Characteristics of Automated Methods.

Instruments bearing the USEPA equivalency designation predominate in the Australian scene where scope for testing and certification is limited. Accordingly it is necessary to accept the USEPA designation of instruments with minor modifications, where appropriate, for local requirements. The USEPA definitions for performance characteristics vary considerably in presentation (if not in substance) from those currently prescribed in Document ISO/TC 146/SC 4 N 15 3rd Revision, Performance Characteristics and Related Concepts for Air Quality Measuring Methods, but have nevertheless been retained, virtually intact, for the sake of consistency with USEPA.

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## STANDARDS ASSOCIATION OF AUSTRALIA

## Australian Standard

for

**AMBIENT AIR—DETERMINATION OF GASEOUS POLLUTANTS—  
DEFINITIONS FOR INSTRUMENTS AND GENERAL REQUIREMENTS**

**1 SCOPE.** This standard defines terms for instruments used for determining gaseous pollutants in ambient air and provides general reference information and procedures.

NOTE: This standard is for use as a basic reference in the preparation of methods for determining gaseous pollutants in ambient air. As such, it will make for consistency and brevity in such methods.

**2 DEFINITIONS.** For the purpose of this standard, the following definitions apply to instruments:

**2.1 Parameter**—one of the characteristics related to an air sample: concentration of constituent, or other quantifiable property (wind speed, temperature etc).

**2.2 Range**—nominal minimum and maximum concentrations between which a method is capable of measuring.

NOTE: The nominal range is specified by the lower and upper range limits in concentrations units, e.g. 0 to 0.5 p.p.m.

**2.3 Noise**—spontaneous, short duration deviations in output which are not caused by input concentration changes. Noise level is determined as the standard deviation about the mean and is expressed in concentration units.

**2.4 Lower detectable limits**—the minimum pollutant concentration which produces a signal of twice the noise level.

**2.5 Interference equivalent**—positive or negative response caused by a substance other than the one being measured

**2.6 Zero drift**—the change in response to zero pollutant concentration over 12 h and 24 h periods of continuous unadjusted operation.

**2.7 Span drift**—the percent change in response to an on-scale pollutant concentration over a 24 h period of continuous unadjusted operation.

**2.8 Lag time**—the time interval between a step change in input concentration and the first observable corresponding change in response.

**2.9 Rise time**—the time interval between initial response and 95 percent of final response after a step increase in input concentration.

**2.10 Fall time**—the time interval between initial response and 95 percent of final response after a step decrease in input concentration.

**2.11 Precision**—variation about the mean of repeated measurements of the same pollutant concentration on the same instrument, expressed as one standard deviation about the mean.

**2.12 Parts per million (p.p.m.)**—a ratio expressing the volume of gaseous pollutant contained in 1 000 000 volumes of atmosphere. It may be expressed in terms of millilitres per cubic metre as the values are identical. Alternatively, it is one million times the ratio of the partial pressure of gaseous pollutant to the pressure of the atmosphere in which it is contained.

**2.13 Test atmosphere.** A reference test atmosphere containing a known concentration of pollutant.

**3 APPARATUS.** For methods embodying direct-reading instruments, a selection of eligible types shall be listed.

The performance requirements shall be consistent with the definitions given in Clause 2, the units shall be as exemplified in Table 1 and the qualifications shall be according to those qualifying the numerical values exemplified in Table 1.

Interference equivalents shall be given for interferent gases both individually and collectively with the interferent gases and their concentrations listed.