

Australian Standard[®]

Methods for sampling and analysis of ambient air

Method 3.1: Determination of acid gases—Titrimetric method

PREFACE

This Standard was prepared by the Standards Australia Committee on Methods for Examination of Air to supersede AS 2509 — 1981, *Ambient air—Determination of acid gases (expressed as sulphur dioxide)*.

In the preparation of this Standard, consideration was given to BS 1747, *Measurement of air pollution, Part 3: Determination of sulphur dioxide*, and to ISO 219, *Air quality—Determination of gaseous sulphur compounds in ambient air—Sampling equipment*. Acknowledgement is made of the assistance obtained therefrom.

FOREWORD

Because of their widespread distribution, acid gases, of which sulfur dioxide is often the main constituent, have long been regarded as a principal gaseous pollutant and the need is recognized for investigations at various sites, including atmospheric measurement of the day-to-day variations in concentration.

METHOD

1 SCOPE. This Standard sets out a titrimetric method for the determination of acid gases (expressed as sulfur dioxide) in ambient air. The method is applicable to ambient air in which the sulfur dioxide concentration ranges from approximately 0.007 p.p.m to 3.5 p.p.m by volume ($20 \mu\text{g}/\text{m}^3$ to $10\,000 \mu\text{g}/\text{m}^3$).

The method is suitable for determining acid gases in the atmosphere, preferably as an average over a 24 h period at a particular location. However, it is emphasized that the method is not specific for sulfur dioxide.

NOTE: In order to avoid interference from suspended matter, a filter is specified as an integral part of the apparatus; the filter also enables suspended matter to be measured separately within a limited size range.

2 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS	
2162	Code of practice for the use of volumetric glassware
165	Burettes and bulb burettes
2022	Ambient air—Guide for the siting of sampling units
BS	
2461	Specification for gas washing bottles

3 PRINCIPLE. Sulfur dioxide, with varying, but normally much smaller amounts of other acid and alkaline gases (see Note 1), is absorbed in a solution of hydrogen peroxide. The resulting net acidity of the solution is titrated to pH 4.5 with standard alkali.

NOTES:

1. Acid mists will mainly be retained on the filter paper in the smoke filter (see Figure 1) and will not affect the results appreciably.