AS 3580.7.1—2011
(Incorporating Amendment No. 1)

Australian Standard®

AS 3850.7.1—2011

Methods for sampling and analysis of ambient air

Method 7.1: Determination of carbon monoxide—Direct-reading instrumental method

PREFACE

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee EV-007, Methods for Examination of Air, to supersede AS 3580.7.1—1992, *Methods for sampling and analysis of ambient air*, Method 7.1: *Determination of carbon monoxide—Direct-reading instrumental method*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than as an Australian/New Zealand Standard.

This Standard incorporates Amendment No. 1 (February 2012). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The requirements for instruments suitable for using this method are based on those given in the United States Environmental Protection Agency (US EPA) Title 40, Part 53 of the Code of Federal Regulations (40 CFR Part 53—*Ambient Air Monitoring Reference and Equivalent Methods, Subpart B—Procedures for Testing Performance Characteristics of Automated Methods*.

FOREWORD

Carbon monoxide is a colourless, odourless gas that results from the incomplete combustion of carbonaceous fuels. The dominant source of carbon monoxide in urban and industrial environments is motor vehicle exhaust. Other sources include industrial processes (e.g. steam and power generation; iron and steel production), biomass burning, bushfires, backyard incinerators and hydrocarbon oxidation in the atmosphere, together with natural emissions from vegetation and oceans. As carbon monoxide can be both metabolized and produced by vegetation, trace concentrations are a normal constituent of the environment.

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STANDARDS Australia

METHOD

1 SCOPE

This Standard sets out the method for the determination of carbon monoxide in ambient air using a direct-reading instrumental method. This method applies to the determination of carbon monoxide in ambient air where the concentration typically lies within the range 0 to 50 p.p.m. by volume (approximately 0 to 62.5 mg/m^3).

2 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard:

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS/NZS

3580 Methods for sampling and analysis of ambient air

3580.1.1 Method 1.1: Guide to siting air monitoring equipment

3580.2.2 Method 2.2: Preparation of reference test atmospheres—Compressed gas method

ISO

Guide to the expression of uncertainty in measurement (ISO GUM)

US EPA

40 CFR Part 53 Code of Federal Regulations, Title 40—Protection of Environment, Part 53—Ambient Air Monitoring Reference and Equivalent Methods

3 DEFINITIONS

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

3.1 Fall time

The time interval, after a step decrease in input concentration, between initial instrument response and 90% of final instrument response.

3.2 Full scale (FS)

The nominated maximum concentration for which an instrument has been calibrated. The full scale is selected to cover the normal range of values expected in the sampling environment.

3.3 Interference equivalent

Positive or negative instrument response caused by a substance other than the one being measured.

3.4 Lag time

The time interval between a step change in input concentration and the first observable corresponding change in instrument response.

3.5 Level 1 calibration

A simplified, two-point analyser calibration used when analyser linearity does not need to be checked or verified.

3.6 Level 2 check

A simple check of an analyser's response. These checks may be performed using non-certified test atmospheres (e.g. permeation tubes, expired gas cylinders).

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