
**Stationary source emissions —
Determination of the mass concentration
of sulfur dioxide — Performance
characteristics of automated measuring
methods**

*Émissions de sources fixes — Détermination de la concentration en
masse de dioxyde de soufre — Caractéristiques de performance des
méthodes de mesurage automatiques*



This is a preview of "ISO 7935:1992". [Click here to purchase the full version from the ANSI store.](#)

Contents

	Page
1 Scope	1
2 Normative references	2
3 Definitions	2
4 Description of the automated measuring systems	3
5 Numerical values of performance characteristics and their applicability	4

Annexes

A Determination of main performance characteristics of automated measuring systems	6
B Additional performance characteristics	10
C Bibliography	11

This is a preview of "ISO 7935:1992". [Click here to purchase the full version from the ANSI store.](#)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7935 was prepared by Technical Committee ISO/TC 146, *Air quality*, Sub-Committee SC 1, *Stationary source emissions*.

Annex A forms an integral part of this International Standard. Annexes B and C are for information only.

This is a preview of "ISO 7935:1992". [Click here to purchase the full version from the ANSI store.](#)

Introduction

Sulfur dioxide can arise in considerable quantities from combustion of fossil fuels used for energy generation, industrial activities processing sulfur or sulfur containing material, and from combustion of sulfur containing waste. The waste gas from these processes, containing sulfur dioxide, is usually discharged into the ambient atmosphere, via a duct or a chimney.

For evaluating the mass concentration of sulfur dioxide present in the waste gas of stationary source emissions, a number of highly developed methods of integrated sampling and subsequent determination by chemical analysis and automated measuring systems are available. Considerable experience exists on their application under plant conditions. One of these methods is standardized as ISO 7934.

ISO 7934 is used for example in comparative measurements, where the automated measuring methods are involved. The automated technique is capable of continuous measurement of the mass concentration of sulfur dioxide.

For methods where performance characteristics are given, the values of performance characteristics are used to decide whether a method is suitable for a given measuring task (see ISO 6879:1983, clause 1). Values of the main performance characteristics of automated measuring systems, capable of determining the mass concentration of sulfur dioxide present in waste gas stationary emission sources, are given in clause 5.

Additional performance characteristics are given in informative annex B.

The procedure for evaluating the values of the performance characteristics listed in clause 5, is described in normative annex A.

This is a preview of "ISO 7935:1992". Click here to purchase the full version from the ANSI store.

Stationary source emissions — Determination of the mass concentration of sulfur dioxide — Performance characteristics of automated measuring methods

1 Scope

This International Standard specifies a complete set of values of performance characteristics for automated measuring systems for the continuous measurement of the mass concentrations of sulfur dioxide in stationary source emissions.

NOTE 1 If the performance characteristics of an automated measuring system are listed according to table 1, this ensures that the automated measuring system is reliable and gives satisfactory continuous results.

The set of data listed in table 1 refers to the performance characteristics of measurement methods, including all steps from sampling to recording and, if necessary, storage of data.

This International Standard is applicable to extractive and non-extractive automated sulfur dioxide measuring methods. For both methods it implies the applicability of zero and calibration gas and the availability of comparable samples. The automated measuring system can be calibrated with calibration gases, by applying the manual method described in ISO 7934, or by applying an automated measuring system previously verified according to this International Standard using a different principle of detection. The value of the integral performance (3.7) is determined by using ISO 7934 or an automated measuring system verified according to this International Standard with a different principle of detection. At present, the range over which this specification applies is between 0 g/m^3 to $0,1 \text{ g/m}^3$ and 0 g/m^3 to 8 g/m^3 (see table 2 for details).

NOTE 2 Although it is impossible to give precise testing details, the requirements and testing principles are also applicable to non-extractive systems.

Table 1 — Main performance characteristics

Performance characteristics	Numerical value	Test methods (see annex A)
Detection limit	2 % ¹⁾	A.4.2.1.1
Effect of interfering substances	± 2 % ^{1) 2)}	A.4.2.1.2
Response time	≤ 200 s ³⁾	A.4.2.1.3
Integral performance (s_A)	$\pm 2,5$ % ^{1) 4)}	A.4.2.2

1) Related to the upper limit of measurement.

2) The main interfering substances in the flue gas from combustion plants are CO_2 , CO , NO , H_2O and, in smaller concentrations, NO_2 and NH_3 . If the water vapour is not removed from the flue gas of coal and waste fired incinerators, HCl and HN may also interfere. In special cases there may be other interfering substances (e.g. cyanide).

3) Assuming an integration time of 30 min.

4) See 3.7.

The facilities at which the values of the performance characteristics given in table 1 have been verified according to this International Standard in the appropriate ranges are listed in table 2.