

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ/T 56-2000

**Determination of sulphur dioxide from exhausted gas of
stationary source - Iodine titration method**
(English Translation)

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Foreword

This Standard specifies the iodine titration method to determine the concentration of sulphur dioxide from exhausted gas of stationary source as well as its total emission. During the formulating, this Standard referred to the national standard. GB/T 16157-

1996 "The determination of particulates and sampling methods of gaseous pollutants

emitted from exhaust gas of stationary source" and parts of "Air and waste gas monitoring analysis method" issued by State Environmental Protection Administration in 1990. It also referred to relevant sampler's technical indicators and domestic-foreign enterprise standards.

This Standard was proposed by Department of Science, Technology and Standards of State Environmental Protection Administration.

This Standard was drafted by China National Environmental Monitoring Center.

This Standard shall be interpreted by State Environmental Protection Administration.

Determination of sulphur dioxide from exhausted gas
of stationary source - Iodine titration method

1 Scope

This Standard specifies the iodine titration method to determine the concentration of sulphur dioxide from exhausted gas of stationary source as well as the determination of sulfur dioxide emission rate.

2 Normative references

The following standard contains the provisions which, through reference in this Standard, constitute the provisions of this Standard. It has the same effect as this Standard.

GB/T 16157-1996 The determination of particulates and sampling methods of gaseous pollutants emitted from exhaust gas of stationary source

3 Determination method-principle, determination range and

determination error

Sulfur dioxide from exhausted gas is absorbed by the mixed solution of ammonium sulfamate. Use iodine standard solution to titrate. Calculate the sulfur dioxide concentration according to the titration. Reactions are shown as follows.

Determination range. 100 ~ 6000 mg/m³; within the determination range, the batch error of the method shall not be greater than $\pm 6\%$.

4.1 When boiler fuel is burning under normal conditions, the content of reducing

substances such as H₂S in the exhausted gas is very little; its influence to the determination is negligible.

7.3 Sampling frequency

Under same working conditions, it shall determine three times in a row; take the average value as determination result.

8 Determination

After sampling, it shall titrate the sample as soon as possible. The sample shall not be placed for more than 1h. Move all samples in two absorption bottles into the iodine bottle. Use a small amount of absorption solution (6.1) to respectively wash the absorption bottle twice. Move the washing solution into the iodine bottle as well. Shake well. When adding 50 ml of 2 g/L starch solution (6.3), use 0.010 mol/L iodine standard solution (6.8) to titrate to blue. Record the consumption V (ml).

Separately, take the absorption solution (6.1) of same volume. Conduct blank titration in the same method. Record the consumption V_0 (ml).

If the sulfur dioxide concentration of the gas is high, it shall take part of absorption solution to titrate. At this time, the result calculated according the equation listed in Clause 9 shall be divided by the ratio of partial absorption solution accounting for total absorption solution.

9 Calculation

Where,

c' - sulfur dioxide concentration of dry gas under standard conditions (mg/m³);

$c(1/2 I_2)$ - concentration of iodine stock solution (mol/L);

V_{nd} - sampling volume of dry gas under standard conditions (L);

32.0 - the mass (g) of sulfur dioxide (1/2 SO₂) that is equal to 1 L of 1 mol/L iodine standard solution (1/2 I₂).

10.1 Determination and calculation of exhausted gas flow

According to provisions in 7.1 ~ 7.5 of GB/T 16157-1996, measure the exhaust flow rate. According to provisions in 7.6, calculate dry exhaust gas flow Q_{sn} (m³/h) under standard conditions.

Where,

Q_{sn} - dry exhaust gas flow under standard conditions.

10.2.1 When sulfur dioxide concentration is represented in ppm (V/V), its concentration

c can be converted to sulfur dioxide concentration of dry gas under standard conditions, according to the following equation.

Where,

c' - sulfur dioxide concentration of dry gas under standard conditions (mg/m³).

10.2.2 Calculation of sulfur dioxide emission rate G

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