

ICS 13.060
CCS Z 16

HJ

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

HJ 1050-2019

**Water quality - Determination of chlorate, chlorite, bromate,
dichloroacetic acid and trichloroacetic acid - Ion chromatography**

水质 氯酸盐、亚氯酸盐、溴酸盐、二氯乙酸和三氯乙酸的测定 离子色谱法
(English Translation)

Issued on: January 1, 1970

Implemented on: April 24, 2020

Issued by: Ministry of Ecology and Environment

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Foreword

In order to implement the "Environmental Protection Law of the People's Republic of China" and the "Law of the People's Republic of China on Water Pollution Control", protect the ecology Environment, protect human health, standardize the determination methods of chlorate, chlorite, bromate, dichloroacetic acid and trichloroacetic acid Law to formulate this standard.

This standard specifies the determination of chlorate, chlorite, bromate, and chlorite in surface water, groundwater, domestic sewage and industrial wastewater.

Ion chromatography of dichloroacetic acid and trichloroacetic acid.

Appendix A of this standard is a normative appendix, and Appendix B and Appendix C are informative appendixes.

This standard is issued for the first time.

This standard is formulated by the Department of Eco-Environmental Monitoring, Laws and

Standards Department of the Ministry of Ecology and Environment.

This standard was drafted. China Environmental Monitoring Station.

Verification units of this standard. Liaoning Provincial Ecological Environment Monitoring Center, Inner Mongolia Environmental Monitoring Center Station, Shanxi Original Ecological Environment Monitoring Center, Yangzhou Environmental Monitoring Center of Jiangsu Province, Environmental Protection Monitoring Station of Zhanjiang City, Qingdao Ecology of Shandong Province Environmental Monitoring Center and Handan Environmental Monitoring Center.

This standard was approved by the Ministry of Ecology and Environment on October 24, 2019.

This standard will be implemented from April 24, 2020.

This standard is explained by the Ministry of Ecology and Environment.

Water quality chlorate, chlorite, bromate, dichloroacetic acid and trichloroacetic acid Determination of ion chromatography Warning. The acetonitrile, acetic acid, and formic acid used in the experiment are volatile, and the sulfuric acid and sodium hydroxide are strongly corrosive.

Reagent preparation should be performed in a fume hood; protective equipment should be worn as required during operation to avoid breathing into the respiratory tract or touching the skin and Clothing.

1 Scope

This standard specifies ion chromatography for the determination of chlorate, chlorite, bromate, dichloroacetic acid and trichloroacetic acid in water.

This standard applies to chlorate, chlorite, bromate, and chlorite in surface water, groundwater, domestic sewage and industrial wastewater.

Determination of chloroacetic acid and trichloroacetic acid.

When the injection volume is 200 μ L, the chlorate (as ClO_3^- -Meter), chlorite (as ClO_2^- -Calculated), bromate (as BrO_3^- Method), the detection limits of the methods of dichloroacetic acid (DCAA) and trichloroacetic acid (TCAA) are 0.005 mg/L, 0.002 mg/L, 0.002 mg/L, 0.005 mg/L, and 0.01 mg/L, and the lower detection limits are 0.020 mg/L, 0.008 mg/L, 0.008 mg/L, 0.020 mg/L, and 0.04 mg/L.

2 Normative references

This standard refers to the following documents or clauses therein. For undated references, the valid version applies to this standard.

HJ/T 91 Technical specifications for surface water and sewage monitoring HJ/T 164
Technical Specifications for Groundwater Environmental Monitoring

3 Method principle

The target compound in the sample is separated into the ion chromatography separation column with the eluent, and detected by a conductivity detector.

Qualitative in time, quantitative in height or area.

4 Interference and cancellation

4.1

Chloride may interfere with the determination of bromate or dichloroacetic acid. Available if sample peaks overlap Ag/Na columns remove interference.

4.2

Sulfate ion may interfere with the determination of trichloroacetic acid. If chromatographic peaks overlap, the Ba column can be used for sample pretreatment.

Eliminate interference, or achieve effective separation by reducing eluent concentration.

4.3

Nitrite may interfere with the determination of dichloroacetic acid. If chromatographic peaks overlap, you can reduce the eluent concentration and adjust Column temperature or the amount of acetonitrile added to achieve effective separation.

4.4

The reducing ions in the sample will make the chlorite measurement result low, which can be masked by adding thiourea.

4.5

The presence of high concentrations of chlorine dioxide in the sample affects the analysis. Interference can be eliminated by blowing nitrogen and adding thiourea.

5 Reagents and materials

Unless otherwise stated, analytical reagents that meet national standards are used in the analysis. The experimental water is free of target compounds.

Deionized water with resistivity ≥ 18.2 M.cm (25 ° C).

5.1

Acetonitrile (CH₃CN). chromatographically pure.

5.2

Sodium hydroxide (NaOH). excellent grade, granular.

5.3

Thiourea (CH₄N₂S).

5.4

Sodium carbonate (Na₂CO₃). excellent grade pure.

Bake at 105 ° C ± 5 ° C for 2 h before use and store in a desiccator.

5.5

Sodium bicarbonate (NaHCO₃). excellent grade pure.

Equilibrate in a desiccator for 24 h before use.

5.6

Sodium chlorate. w (NaClO₃) ≥99%.

5.7

Sodium chlorite. w (NaClO₂) ≥80%.

5.8

Sodium bromate. w (NaBrO₃) ≥99%.

5.9

Dichloroacetic acid. rho (Cl₂C₂H₂O₂) = 1.56 g/ml.

5.10

Trichloroacetic acid. w (Cl₃C₂HO₂) ≥99%.

5.11

Stock solution of sodium hydroxide eluent. rho (NaOH) = 1.53 g/ml.

Accurately weigh 100.0 g of sodium hydroxide (5.2), add 100 ml of water, stir until completely dissolved, and let it stand in a polyethylene bottle.

Leave it for 24 hours and keep it sealed for 3 months. Commercial solutions can also be purchased.

5.12

Sodium hydroxide solution. rho (NaOH) = 4 g/L.

Weigh 1 g of sodium hydroxide (5.2) and dissolve in 250 ml of water.