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

GB/T 14571.5-2016

**Test method of monoethylene glycol for industrial use - Part 5:
Determination of chloride ion - Ion chromatography**

工业用乙二醇试验方法 第5部分：氯离子的测定 离子色谱法

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Foreword

GB/T 14571 consists of the following parts. GB/T 14571.1, Test method of monoethylene glycol for industrial use - Part 1. Determination of acidity - Titration method GB/T 14571.2, Test method of ethylene glycol for industrial use - Part 2. Determination of purity and impurities - Gas chromatography GB/T 14571.3, Ethylene glycol for industrial use - Determination of content of total aldehydes present - Spectrophotometric method GB/T 14571.4, Ethylene glycol for industrial use - Determination of ultraviolet transmittance - Ultraviolet spectrophotometric method GB/T 14571.5, Test method of monoethylene glycol for industrial use - Part 5. Determination of chloride ion - Ion chromatography This Part is Part 5 of GB/T 14571. This Part was drafted in accordance with the rules given in GB/T 1.1-2009. This Part was proposed by China Petrochemical Corporation. This Part shall be under the jurisdiction of Subcommittee on Petrochemical of National Technical Committee on Chemicals of Standardization Administration of China (SAC/TC 63/SC4). The drafting organization of this Part. China Petroleum & Chemical Corporation Shanghai Petrochemical Research Institute. Main drafters of this Part. Peng Zhenlei, Zhang Yuhong, Cao Jiayi, Xu Jingzao. Test method of monoethylene glycol for industrial use - Part

5.Determination of chloride ion - Ion chromatography WARNING. This Part is not intended to describe all security issues related to its use. It is the responsibility of the user to take

appropriate safety and health measures to ensure the compliance with relevant national regulations.

1 Scope

GB/T 14571.5-2016 is the Chinese national standard on test method of monoethylene glycol for industrial use - part 5: determination of chloride ion - ion chromatography, in the field of chemical technology. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 13 October 2016 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 May 2017. Classification: ICS 71.080.60, CCS G16. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Part of GB/T 14571 specifies ion chromatography for determination of chloride ion in ethylene glycol for industrial use. This Part is applicable to determine the chloride ion of which the concentration range is 0.01mg/kg~1.0mg/kg in ethylene glycol for industrial use.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 3723, Sampling of chemical products for industrial use - Safety in sampling

GB/T 6680, General rules for sampling liquid chemical products

GB/T 6682, Water for analytical laboratory use - Specification and test methods

GB/T 8170, Rules of rounding off for numerical values & expression and judgement of limiting values

3 Method summary

Use syringe extraction method to introduce sample into sample loop. Load into the anion exchange column from the eluent via a six-way valve.

4 Reagents and materials

4.1 Water. grade one water specified in GB/T 6682 and has been degassed.

4.2 Sodium chloride. working benchmark.

4.3 Potassium hydroxide. guaranteed reagent.

4.7 Nitrogen. purity is not less than 99.99% (volume fraction).

4.8 Quality control sample. select a representative stable ethylene glycol sample as a quality control sample or prepare quality control sample according to the method of 7.2.1.

4.9 Chloride ion standard stock solution. prepare according to the following methods; or purchase standard solution.

4.10 Sodium carbonate / sodium bicarbonate eluent. 4.5mmol/L sodium carbonate and 0.8mmol/L sodium bicarbonate mixed solution. It is recommended to use eluent generator to generate. It can also prepare according to the following methods.

4.11 Potassium hydroxide eluent. 5mmol/L potassium hydroxide solution. It is recommended to use eluent generator to generate. It may also prepare according to the following methods.

5.1 Ion chromatograph

5.1.1 Eluent pump. the parts of the pump that contact the eluent shall be non- metallic and resistant to strong acids and bases. It may use nitrogen to replace pump delivery eluent.

5.2 Chromatographic column See Table 1 for recommended chromatographic columns and typical operating conditions. The typical chromatograms are shown in Figure 1 and Figure 2. Other chromatographic columns and operating conditions that meet the separation and quantitation requirements specified in this Part can be used.

5.3 Volumetric flask. polypropylene, 100mL.

5.4 Analytical balance. resolution is 0.0001g.

6 Sampling

In accordance with the provisions of GB/T 3723 and GB/T 6680.

7 Analysis steps

7.1 Instrument preparation Start ion chromatograph. Debug and prepare the instrument according to the instruction manual of the instrument, so as to meet typical operating conditions as shown in Table 1 or other suitable conditions for equivalent separation.

7.2 Standard curve

7.3 Sample determination Under the same test conditions as the analytical standard solution, analyze and determine the sample.

8 Calculation of analysis results

According to the peak area of chloride ion, its concentration is determined by the corresponding standard curve (mg/kg).

9 Expression of analysis results

For any sample, use the arithmetic mean of the results of two repeated measurements to report the analysis results.

10 Precision

10.1 Repeatability In the same laboratory, the same operator uses the same device. According to the same test method, test the same test object independently of each other in a short time.

10.2 Reproducibility In different laboratories, the different operator uses the different device. According to the same test method, test the same test object independently.

11 Quality control

11.1 Ensure the performance of the instrument and the accuracy of the test procedures by analyzing a controlled quality control sample.

11.2 In order to establish the statistical control state of the experimental process, after the latest valid calibration, use the well-stored quality control sample in

4.8 as an unknown sample to perform regular determination.