

Translated English of Chinese Standard: GB/T4615-2013

Translated by: www.ChineseStandard.net

Wayne Zheng et al.

Email: Sales@ChineseStandard.net

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GB

National Standard
of the People's Republic of China

GB/T 4615-2013
Replacing GB/T 4615-2008

Poly (vinyl chloride) - Determination of residual vinyl
chloride monomer - Gas-chromatographic method

(ISO 6401:2008, Plastics - Poly (vinyl chloride) - Determination of residual vinyl
chloride monomer - Gas-chromatographic method, MOD)

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Preface

This Standard is written in accordance with rules given in GB/T 1.1-2009.

This Standard replaces GB/T 4615-2008 "Poly (vinyl chloride). Determination of residual vinyl chloride monomer content. Gas-chromatographic method".

Compared with GB/T 4615-2008, the major technical changes are as follows:

- MODIFY the Chinese name of the standard;
- ADJUST the scope of the standard (Chapter 1 of 2008 edition, Chapter 1 of this document);
- ADD chapter "Normative references";
- ADD chapter "Terms and Definitions";
- ADD "Warnings";
- ADJUST the structure of the standard and REMOVE method B;
- MODIFY the "sample weight and volume of solvent", "operational steps" and "chloride standard solution preparation" and other technical content (Chapter 5 of this document);
- ADD chapter "Precision";
- REVISE Appendix A (Appendix A of this document);
- REVISE Appendix B (Appendix B of this document);
- ADD Appendix C;
- ADD Appendix D.

This Standard uses redrafting method to modify and adopt ISO 6401:2008 "Plastics -- Poly(vinyl chloride) -- Determination of residual vinyl chloride monomer -- Gas-chromatographic method".

Compared with ISO 6401:2008, this Standard has adjusted the structure considerably. Appendix C provides the changes and comparison list of chapter number between this Standard and ISO 6401:2008.

There exists technical differences between this Standard and ISO 6401:2008. Appendix D gives the list of differences and the corresponding technical reasons.

For ease of use, this Standard also makes the following editorial changes:

- USE "µg/g" to replace "mg/kg" as the unit of sample content of residual vinyl chloride monomer;
- ADD Appendix C, PROVIDE the changes and comparison list of chapter number between this Standard and ISO 6401:2008;
- ADD Appendix D, GIVE the list of differences and the corresponding technical reasons.

This Standard is proposed by China Petroleum and Chemical Industry Federation.

This Standard shall be administered by the National Standardization Technical Committee - Plastic PVC Resin Product Branch (SAC/TC 15/SC 7).

Drafting organizations of this Standard: Xinjiang Zhongtai Chemical Co., Ltd. and Jinxi Chemical Research Institute.

Main drafters of this Standard: Tan Chen, Liang Bin, Shi Yangqiu, and Wang Xiaohong.

The previous standards replaced by this Standard are:

- GB/T 4615-1984, GB/T 4615-2008.

Poly (vinyl chloride) – Determination of residual vinyl chloride monomer - Gas-chromatographic method

Warning: The personnel who use this Standard shall have practical experience of regular lab. This Standard does not indicate all possible safety problems. Users are responsible for taking appropriate safety and health practices and to ensure compliance with the relevant conditions of the national regulations.

1 Scope

This Standard specifies the method that uses headspace gas-liquid chromatography to determine the monomer content of residual vinyl chloride in polyvinyl chloride (PVC).

This Standard applies to the determination of PVC resin and vinyl chloride monomer content in its compound, the detection range is 0.1 µg/g - 3.0 µg/g.

2 Normative references

For application of this document, the following documents are essential. For dated references, only the dated editions are applicable to this document. For undated references, the latest editions (including any amendments) apply to this document.

GB/T 2035 Plastic terms and their definitions (GB/T 2035-2008, ISO 472:1999, IDT)

3 Terms and definitions

Terms and definitions defined in GB/T 2035 apply to this document.

4 Principles

DISSOLVE/SWELL PVC sample into N, N'-dimethylacetamide solvent, USE headspace gas-liquid chromatography to determine vinyl chloride content in the sample.

5 Instruments

General laboratory instruments and the following equipment:

5.1 Gas chromatography (GC).

5.2 Hydrogen flame ionization detector (FID).

5.3 GC column, the column shall be able to completely separate vinyl chloride from impurities in the sample. The signal obtained from 0.01 mg/L of vinyl chloride solution shall be at least three times of the baseline noise. Examples of suitable chromatography column refer to Table A.1 of Appendix A. Other equivalent chromatography column may also be chosen.

5.4 Data processing system, it is used for collecting data and processing gas chromatography signal.

5.5 Thermostat, it can control at (70 ± 1) °C.

5.6 Glass bottles, the volume is 30 mL, with silicone septa and metal screw sealing cap.

5.7 Glass bottles, common volume is (22.5 ± 0.5) mL, with silicone septa and metal screw sealing cap.

5.8 Glass pipettes, the volumes are 25 mL and 10 mL.

5.9 Micro syringes, the volumes are 500 μ L 100 μ L, or other suitable volume.

5.10 Glass gas-tight syringe, the volume is 10 mL, or other suitable volume.

5.11 Balance, accurate to 0.1 mg.

5.12 Balance, accurate to 0.01 g.

6 Reagents and materials

Reagents used are of analytical grade.

6.1 Vinyl chloride, purity is greater than 99.5%. Gas cylinders of vinyl chloride shall be with syringe adapter.

- b) The integral identification of the sample;
- c) The single measured values and their arithmetic mean;
- d) The difference with this Standard;
- e) Testing personnel and date, etc.

		equilibrium after more than 30 min of thermostat, with accurate result, and improving detection efficiency
Appendix A	MODIFY the contents in Appendix A of ISO 6401:2008	PROVID an appropriate gas-chromatography column and corresponding chromatographic conditions. It is suitable for China's conditions
Appendix B	Headspace injection's parameters in 8.2 and 8.3 of ISO 6401:2008 8.2 are integrated into Appendix B	According to the standard's needs

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Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

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