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

GB/T 12009.4-2016

Replacing GB/T 12009.4-1989

**[Including 2019XG1] Plastics -- Aromatic isocyanates for use in
the production of polyurethane -- Part 4: Determination of
isocyanate content**

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Foreword

The GB/T 12009 series of standards is divided into five parts.

---GB/T 12009.1 Determination of total chlorine content in isocyanates;

--- GB/T 12009.2 Aromatic isocyanates for the production of plastic polyurethane - Part 2. Determination of hydrolyzed chlorine;

--- GB/T 12009.3 Plastic polymethylene polyphenyl isocyanate - Part 3. Determination of viscosity;

Polycarbonate - Part 4. Determination of isocyanate content;

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This part is the fourth part of GB/T 12009.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 12009.4-1989 "Method for determination of isocyanate content in polymethylene polyphenyl isocyanate", and

Compared with GB/T 12009.4-1989, the main technical changes are as follows.

--- Change the standard name to "Aromatic isocyanate for plastic polyurethane production - Part 4. Determination of isocyanate content";

--- Increased interference (see Chapter 3);

--- Increased considerations and methods for sampling (see Chapter 4);

--- Increased test conditions (see Chapter 5);

--- Method A solvent with acetone instead of isopropanol (see 6.2.2, 1989 edition of 3.2.2);

--- The sample volume is refined according to different products (see 6.4.2, 7.4.2; 1989

edition 3.4.1, 4.4.1);

--- Titration method increases the endpoint color titration method (see 6.4.4.2, 7.4.3.2);

--- Toluene/trichlorobenzene and hydrochloric acid - methanol standard titration solution instead of the original method B hexahydropyridine method (see Chapter 7, 1989 edition) Chapter 4);

--- Increase the acceptable changes during the test (see Chapter 8);

--- Cancellation of the Arbitration Law (see Chapter 8 of the 1989 edition);

--- Added Appendix A.

This section uses the redrafting method to refer to ISO 14896.2009 "Determination of isocyanate content of plastic polyurethane raw materials", and

The degree of conformity of ISO 14896.2009 is non-equivalent.

This part was proposed by the China Petroleum and Chemical Industry Federation.

This part is under the jurisdiction of the National Plastics Standardization Technical Committee Polyurethane Plastic Subcommittee (SAC/TC15/SC8).

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1 Scope

This part of GB/T 12009 specifies two methods for determining the isocyanate content of aromatic isocyanates for polyurethane production.

This method A is applicable to refined toluene diisocyanate (hereinafter referred to as TDI) and diphenylmethane diisocyanate (hereinafter referred to as

MDI), polymethylene polyphenyl isocyanate (hereinafter referred to as polymeric MDI) and their prepolymers; Method B is applicable to TDI, MDI and

The refined, crude or modified isocyanate obtained by polymerizing MDI is also suitable for use in mixtures of TDI, MDI and polymeric MDI isomers. its

This method can also be used if his isocyanate is proven to be suitable.

This section does not apply to blocked isocyanates.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 601-2002 Preparation of chemical reagent standard titration solution

GB/T 6682 laboratory analysis water specifications and test methods (GB/T 6682-2008, ISO 3696.1987, MOD)

GB/T 12009.5 - Determination of acidity - Part 5. Determination of acidity (GB/T 12009.5-2016, ISO 14898.1999, NEQ)

3 interference

Phosgene, isocyanate in the carbamoyl chloride, hydrochloric acid and any other acid or alkali compounds interfere. In refined isocyanate, this

The content of some impurities is small and does not affect the measurement. However, some crude or modified isocyanates may contain up to about 0.3% of acidic substances, so they are not refined.

The reported NCO content of the isocyanate should be stated as "corrected" or "uncorrected" acidity.

4 sampling

Due to the reaction of isocyanate with moisture in the air, special care should be taken when sampling (see warning). Common sampling method (for example, in the open

Sampling in the container), even if the sampling speed is very fast, can cause the sample to contain insoluble urea, so it is recommended to use a dry inert gas when sampling (such as

Protected by nitrogen, argon or dry air.

Note. Isocyanate is harmful to the skin through its absorption or inhalation of its vapor. Keep ventilation and wear protective gloves and glasses when handling.

5 test conditions

The laboratory relative humidity should be (50 +/- 10)%.