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

GB/T 12688.9-2011

**Test method of styrene for industrial use -- Part 9:
Determination of trace benzene -- Gas chromatographic method**

工业用苯乙烯试验方法 第9部分：微量苯的测定 气相色谱法

(English Translation)

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Foreword

GB/T 12688 "for industrial use - Test methods" is divided into the following sections.

- Part 1. purity and hydrocarbon impurities - Gas chromatographic method;
- Part 3. Determination of polymer content;
- Part 4. Determination of the peroxide titration;
- Part 5. Determination of total aldehyde titration;
- Part 6. for industrial use - Determination of trace sulfur - Oxidative Microcoulometry;
- Part 8. polymerization inhibitor (p - tert butyl catechol) determination of spectrophotometry;
- Part 9. Trace Benzene by Gas Chromatography.

This section GB/T 12688 Part 9.

The partial modification (in English) "Standard Test Method for Trace Benzene hydrocarbon solvent by gas chromatography" With ASTM D6229-06, Part Structural differences and points of ASTM D6229-06 see Appendix A.

This section compared with ASTM D6229-06 main technical changes as follows.

- Detection range was adjusted to 0.2mg/kg ~ 100mg/kg;
- Increased capillary flow control system;
- Repeatability limit use of the provisions;
- Normative references cited in our standards.

Appendix A of this section is an informative annex.

This part is proposed by the China Petroleum and Chemical Corporation.

This part of the National Standardization Technical Committee Petrochemical Chemical Technical Committee (SAC/TC63/SC4) centralized.

This section drafted by. China Petroleum & Chemical Corporation Shanghai Research Institute of Petrochemical.

1 Scope

This section provides the determination of trace amounts of benzene styrene industrial gas chromatography.

This section applies to industrial use Determination of styrene content in the range of 0.2mg/kg ~ 100mg/kg of benzene.

This section is not intended to illustrate the safety problems associated with its use, the user has the responsibility to take appropriate safety and health practices and security Certified to comply with the provisions of the relevant national regulations.

Note: Styrene monomer is flammable. When in contact with peroxide, an inorganic acid and aluminum chloride exothermic polymerization reaction occurs. high its concentration liquid styrene vapor on the eyes and respiratory system irritation there.

2 Normative references

The following documents contain provisions which, through reference GB/T 12688 in this section constitute provisions of this section. For dated reference documents Member, all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to reach under this section Parties to research agreement to use the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 3723 Sampling of chemical products for industrial use General Safety (GB/T 3723-1999, ISO 3165. 1976, idt) GB/T 6680 General rules for sampling liquid chemical products GB/T 8170 repair value expressed about the rules and limit values
and judgment

3.1 Double-column series valve system

The appropriate amount of sample injected with two capillary column switching valve and a gas chromatograph, the sample first by a non-polar column, the components according to the boiling point Isolated, after column octane outflow valve switching, the heavies cleaning and venting of benzene and lighter components cut polar capillary column, benzene and non-aromatic Hydrocarbons separated effectively measure the peak area of benzene with hydrogen flame ionization detector (FID), other than the

standard method to calculate the concentration of benzene in mg/kg expressed.

3.2 Capillary Flow Control System

The appropriate amount of sample injected with central cutting technology and dual detector FID gas chromatograph, the sample first by a non-polar column, each group Points separated by boiling point, determined according to the central cutting period benzene peak time, and cut extremely capillary columns, benzene and non-aromatics effective Separation, after heavy component blowback venting, measuring the peak area of benzene with hydrogen flame ionization detector (FID), other than the standard method to calculate the concentration of benzene, in in mg/kg.

4 Reagents and materials

4.1

Carrier gas. nitrogen, purity (volume fraction) $\geq 99.995\%$, silica gel and molecular sieve 5A dried, purified.

4.2

Combustion gas (FID). hydrogen, purity (volume fraction) $\geq 99.99\%$.

4.3

assisting gas. air, oil, silica gel and molecular sieve 5A dried, purified.

4.4

Benzene. purity (mass fraction) of not less than 99.5%.

4.5

Styrene. purity (mass fraction) of not less than 99.7%, no benzene.

4.6

n-heptane. purity (mass fraction) of not less than 99%.