

ICS 71.080.15
CCS G 16



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

GB/T 12688.3-2011

Replacing GB/T 12688.3-1990

**Test method of styrene for industrial use -- Part 3:
Determination of content of polymer**

工业用苯乙烯试验方法 第3部分：聚合物含量的测定

(English Translation)

Issued on: May 12, 2011

Implemented on: November 1, 2011

Issued by: Standardization Administration of China

Table of Contents

- Foreword
- 1 Scope
- 2 Normative references
- 3 PRINCIPLE OF THE METHOD
- 3.1 Spectrophotometry
- 3.2 Visually
- 4 Reagents and materials

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 3.

The partial modification using ASTM D2121-07 "Standard Test Method for styrene monomer in the polymer content" (in English). This section and structural differences ASTM D2121-07 in Appendix A.

This section compared with ASTM D2121-07 main technical changes as follows.

- Normative references cited in our standards;
- On the acceptance of high-purity polystyrene particles were prescribed;
- Removed from the standard curve plotted in the 25 °C temperature requirements.

This Part replaces GB/T 12688.3-1990 "for industrial use - spectrophotometric determination of polymer content." this portion of the GB/T 12688.3-1990 The main

differences are as follows.

- Changing the name of the standard;
- Spectrophotometric measurement range is changed to 1mg/kg ~ 15mg/kg;
- Increased high-purity polystyrene particles polystyrene standard stock solution preparation methods;
- Increased visually;
- Removed from the standard curve plotted in the 25 °C temperature requirements.

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 and Chemical Corporation Beijing Yanshan Company.

1 Scope

This section provides an industrial process measurement styrene polymer content.

Spectrophotometry in this section applies to the polymer content in the range of 1mg/15mg/kg ~ kg of styrene measured sample. Polymerization Samples when the content if more than 15mg/kg, should be suitably diluted before the assay.

This method is suitable for the visual part of the polymer content (mass fraction) of not more than 1.0% of styrene measured sample. Samples containing polymers the amount (mass fraction) is greater than 1.0%, it should be appropriately diluted before measurement.

This section does not apply to industrial use in the detection of styrene dimers and trimers.

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 as flammable, exothermic polymerization reaction occurs when contact with peroxide, an inorganic acid and aluminum chloride and the like. High concentrations of liquid styrene and its 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 6682 analytical laboratory use specifications and test methods (GB/T 6682-2008, ISO 3696. 1987, MOD) GB/T 8170 repair value expressed about the rules and limit values and judgment

3.1 Spectrophotometry

Use of a styrene polymer present in the styrene monomer insoluble in principle methanol, was added anhydrous methanol in the sample of styrene, in Absorbance was measured at 420nm, and quantitative calibration curves were compared to determine the content of the polymer.

3.2 Visually

Added styrene sample of anhydrous methanol by visually observing the turbidity of the solution and the standard solution were determined by comparing the polymer content.

4 Reagents and materials

Unless otherwise indicated, the reagents used in this section should be of analytical grade. The water should meet the three water specifications GB/T 6682 regulations.

4.1

n-hexane.

4.2

anhydrous methanol.

4.3

toluene.

4.4

Sodium hydroxide solution. 40g/L.

4.5

Styrene. purity (mass fraction) $\geq 99.6\%$.