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

GB/T 6324.5-2008

**Test method of organic chemical products -- Part 5:
Determination of trace quantities of carbonyl compounds in
organic chemicals
(English Translation)**

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Table of Contents

Foreword...	3
1 Scope...	5
2 Normative references...	5
3 Safety and preventative measures...	6
4 Test method...	6
5 Expression of results...	10

Foreword

GB/T 6324 Test method of organic chemical products consists of six parts.

- Part 1. Water miscibility test of liquid organic chemical products;
- Part 2. Determination of dry residue after evaporation on a water bath for volatile organic liquids;
- Part 3. Determination of permanganate-reducing substances;
- Part 4. Determination of trace sulfur in organic liquid products - Microcoulometric method;
- Part 5. Determination of trace quantities of carbonyl compounds in organic chemicals;
- Part 6. Determination of color for liquids - Tristimulus colorimetry.

This Part is the fifth part of GB/T 6324 and an integrated revision of GB/T 6324.5-1986 and GB/T 6324.6-1986.

The revision of this Part adopts the Standard of American Society for Testing and Materials ASTM E 411-2005 Standard Test Method for Trace Quantities of Carbonyl Compounds with 2,4-Dinitrophenylhydrazine (English version).

This Part was redrafted based on ASTM E 411-2005. Annex A lists the comparison on clause number between this Part and ASTM E 411-2005.

Considering national conditions of China, this Part made some modifications when adopting ASTM E 411-2005. The main difference is as follows.

- added determination of carbonyl compounds - volumetric method (4.2 of this Part), so as to cooperate with the change of the method determination range.

This Part replaces GB/T 6324.5-1986 Organic chemical products for industrial use--Determination of content of carbonyl compounds present--Volumetric method and GB/T 6324.6-1986 Organic chemical products for industrial use--Determination of content of carbonyl compounds present in small amounts--Photometric method.

Compared with GB/T 6324.5-1986 and GB/T 6324.6-1986, the main changes are as follows.

- modified the name of this Part from "Organic chemical products for industrial use--Determination of content of carbonyl compounds present" to "Test method of organic chemical products - Part 5.Determination of trace quantities of carbonyl compounds in organic chemicals" (cover of Edition 1986, cover of this Edition);
- made the corresponding changes for "Scope" (Clause 1 of Edition 1986, Clause 1 of this Edition);
- added spectrophotometric method (see 4.2);
- in the spectrophotometric method, it modified the standard substance from acetophenone to 2-butanone, test temperature from 50°C to room temperature, color development time from 5 min to 12 min, color development wavelength from 445 nm to 480 nm; modified "use ethanol to adjust the instrument zero point " to "adjust the zero point of the spectrophotometer with water" (3.5 and Clause 5 of Edition 1986, 4.2.2.5 and 4.2.4 of this Edition);
- in volumetric method, it added that when the endpoint color change is not obvious, it could use the potentiometric method to determine the end (see 4.3).

Annex A of this Part is informative.

This Part was proposed by China Petroleum and Chemical Industry Association.

This Part shall be under the jurisdiction of Subcommittee on Organic, National Technical Committee on Chemical of Standardization Administration of China (SAC/TC 63 / SC 2).

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Versions of standard substituted by this Standard are.

- GB/T 6324.5-1986, GB/T 6324.6-1986.

Test method of organic chemical products -

Part 5.Determination of trace quantities of carbonyl compounds in organic chemicals

WARNING This Part does not address all safety issues related to the use of standards. It is user's responsibility to take appropriate safety and protective measures and to ensure compliance with the relevant national regulations. See Clause 3 for information on safety and precautionary measures.

1 Scope

This Part specifies the test methods for determination of carbonyl compounds in organic chemical products. spectrophotometric method and volumetric method.

This Part is applicable to the determination of carbonyl compounds in water-soluble and alcohol-soluble organic chemical products. The spectrophotometric method is applicable to the sample determination of which carbonyl compound mass fraction is less than or equal to 0.01%. The volumetric method is

applicable to the sample determination of which carbonyl compound mass fraction is greater than 0.01%.

2 Normative references

The following standards contain the provisions which, through reference in this Part, constitute the provisions of this Part. For dated references, subsequent amendments (excluding corrections) or revisions do not apply to this Part. However, the parties who enter into agreement based on this Part are encouraged to investigate whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this Part.

GB/T 601-2002 Chemical Reagent - Preparations of Standard Volumetric Solutions

GB/T 603-2002 Chemical Reagent - Preparations of Reagent Solution for Use in Test (ISO 6353-1.1982, NEQ)

GB/T 6682-2008 Water for analytical laboratory use - Specification and test methods (eqv ISO 3696.1987)

3.1 Sampling safety shall be specified in the product standard according to product characteristics.

3.2 Methanol is flammable. It may be on fire in distillation. So it should take preventive measures. For example, inspect the flask for cracks;

3.3 2,4-dinitrophenylhydrazine is easy to explode. Open flame or electric spark can make it intense burning. Avoid heat sources during use.

4.1 General

Unless otherwise stated, only reagents identified as analytically pure and grade

4.2.1 Methodology

The carbonyl compounds in the sample react with 2,4-dinitrophenylhydrazine in acidic medium to generate 2,4-dinitrophenylhydrazone. 2,4-