

HG

**CHEMICAL INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

HG/T 3485-2003

Replacing HG/T 3485-1979

Chemical reagent - Vanadium pentoxide

化学试剂 五氧化二钒

(English Translation)

Issued on: January 9, 2004

Implemented on: May 1, 2004

**Issued by: Ministry of Industry and Information Technology of the
People's Republic of China**

Table of Contents

Foreword	3
1 Scope	4
2 Normative References	4
3 Properties	5
4 Specifications	5
5 Test Methods	5
6 Inspection Rules	9
7 Packaging and Marking	9

Foreword

This Standard gives three levels of guaranteed reagent, analytical reagent, and chemical pure. This Standard replaced HG/T 3485-1979.

Compared with HG/T 3485-1979, the major changes of this Standard are as follows.

- Adjust the sample weight for content determination from "0.25g" to "0.3g".
- Change the sulfate determination method from the ethanol method to the general method.
- Change the project name from "ammonium salt" to "ammonium".
- Cancel the chemical analysis method for iron determination; and retain the flame atomic absorption spectrometry method.

1 Scope

This Standard specifies the specifications, test methods, inspection rules, packaging, and marking of the chemical reagent vanadium pentoxide.

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 601 Chemical reagent - Preparations of reference titration solutions

GB/T 602 Chemical reagent - Preparations of standard solutions for impurity

GB/T 603 Chemical reagents - Preparation of preparations and articles used in test methods

GB/T 619 Chemical reagent - Regulations for sampling and acceptance

GB/T 6682 Water for analytical laboratory use - Specification and test methods (neq ISO 3696:1987)

GB/T 9723-1988 Chemical reagent - General rules for flame atomic absorption spectrometry

GB/T 9728 Chemical reagent - General method for the determination of sulphate (eqv ISO 6353-1:1982)

GB 15346 Chemical reagent - Packaging and marking

3 Properties

This reagent is a yellowish-brown or brick-red powder; slightly soluble in water, readily soluble in alkalis, and soluble in hot concentrated acid.

4 Specifications

The chemical reagent vanadium pentoxide shall conform to the specifications in Table 1.

5 Test Methods

Unless otherwise specified, all standard titration solutions, standard solutions, preparations and products used in this Clause shall be prepared in accordance with the provisions of GB/T 601, GB/T 602 and GB/T 603. The water used in the experiment shall comply with the specification of Class III water in GB/T 6682. The sample weighing shall be accurate to 0.01 g.

5.1 Content

Weigh 0.3 g of sample (accurate to 0.0001 g). Add 50 mL of water; slowly add 10 mL of sulfuric acid; heat to dissolve; cool; add 4 drops of 1 g/L phenyl anthranilic acid-ethanol solution; and titrate with ferrous ammonium sulfate standard titration solution $[c(\text{NH}_4\text{Fe}(\text{SO}_4)_2) = 0.1 \text{ mol/L}]$ until the solution turns from purple-red to bright green.

The mass fraction W_1 of vanadium pentoxide, expressed in "%", is calculated according to Formula (1). Where.

V - accurate value of the volume of the ammonium ferrous sulfate standard titration

solution, in mL; c - accurate value of the concentration of the ammonium ferrous sulfate standard titration solution, in mol/L;

M - molar mass of vanadium pentoxide, in g/mol [$M(1/2V_2O_5) = 90.94$]; m - accurate value of the sample mass, in g.

5.2 Hydrochloric acid insoluble matter and silicates

Weigh 3 g of sample; add 20 mL of hydrochloric acid and 1 g of hydroxylamine hydrochloride; heat to dissolve; and evaporate to dryness in a water bath. Cool; add 10 mL of hydrochloric acid, 1 g of hydroxylamine hydrochloride and 100 mL of water; heat to boiling; filter with ashless filter paper; and wash the residue with 10% hot hydrochloric acid solution until the washings are colorless. The filter residue was placed in a crucible that had been ignited to constant weight in a high-temperature furnace at $800^{\circ}\text{C} \pm 50^{\circ}\text{C}$; and slowly heated to carbonize.

It was then ignited to constant weight in a high-temperature furnace at $800^{\circ}\text{C} \pm 50^{\circ}\text{C}$. The residue mass shall not exceed. Guarantee reagent... 3mg; Analytical reagent... 6mg; Chemical pure... 9mg.

5.3 Loss on ignition

Weigh 2 g of sample (accurate to 0.0001 g). Place it in a crucible that had been ignited to constant weight in a high-temperature furnace at $400^{\circ}\text{C} \pm 50^{\circ}\text{C}$; and ignite to constant weight in a high-temperature furnace at $400^{\circ}\text{C} \pm 50^{\circ}\text{C}$.

The mass fraction of loss on ignition, W_2 , expressed in "%", is calculated according to Formula (2).

Where. m_2 - the accurate value of the mass of the residue and crucible after constant weighing, in g; m_1 - the accurate value of the mass of the crucible after constant weighing, in g;