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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 32386-2026

Replacing GB/T 32386-2015

Electronic gas - Tungsten hexafluoride

电子气体 六氟化钨

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. This document replaces GB/T 32386-2015 "Gasical Tungsten Hexafluoride for Electronic Industry". Compared with GB/T 32386-2015, except for the structure... Aside from structural adjustments and editorial changes, the main technical changes are as follows:

a) The scope has been changed (see Chapter 1, Chapter 1 of the.2015 edition);

b) The technical requirements for tungsten hexafluoride have been revised (see Chapter 4, Chapter 3 of the.2015 edition);

c) The sampling requirements have been changed (see Chapter 5,

4.1.4 of the.2015 edition);

d) The method for calculating purity has been changed (see 6.1,

4.2 of the.2015 edition);

e) The methods for determining the content of carbon tetrafluoride, oxygen, nitrogen, carbon monoxide, carbon dioxide, and sulfur hexafluoride have been modified (see 6.2,.2015). Version 4.3);

f) The methods for determining the content of silicon tetrafluoride and hydrogen fluoride have been revised (see 6.3,

4.4 in the.2015 edition);

g) The methods for determining the content of metallic and other elements have been changed (see 6.4,

4.5 in the.2015 edition);

h) The inspection rules have been changed (see Chapter 7,

6.1.1 Calculation of the purity of tungsten hexafluoride at grades I, II, and III

6.1.1.1 Total impurity content The total impurity content is calculated according to formula (1).

6.1.1.2 Purity The purity of tungsten hexafluoride is calculated according to formula (2).

6.1.2.2 Purity The purity of tungsten hexafluoride is calculated according to formula (4).

6.2 Determination of the contents of carbon tetrafluoride, oxygen, nitrogen, carbon monoxide, carbon dioxide, and sulfur hexafluoride

6.2.1 Determination Method The determination of carbon tetrafluoride, oxygen, nitrogen, carbon monoxide, carbon dioxide, and carbon hexafluoride in tungsten hexafluoride according to the method specified in GB/T 28726 is as follows: Sulfur content. Other equivalent methods may be used for determination. In case of disagreement regarding the determination results, arbitration shall be conducted according to the methods specified in GB/T 28726. method.

6.2.2 Pre-separation column

6.2.2.1 Pre-separation column I. A 3m long, 2mm inner diameter 316L stainless steel tube, filled with modified particles with a particle size of 0.18mm~0.25mm. Carbon molecular sieves, or other equivalent pre-separation columns, can be used.

6.2.2.2 Pre-separation column II. A 6m long stainless steel tube with an inner diameter of 2mm, filled with a stationary phase containing 0.18mm~0.25mm particle size particles. Polytetrafluoroethylene monomer of vinyl chloride, or other equivalent chromatographic columns.

6.2.3 Chromatographic column

6.2.3.1 Column I. A stainless steel tube 1.5m long and 2mm inner diameter, packed with 5A molecules with a particle size of 0.18mm~0.25mm. A sieve, or other equivalent chromatographic column. This column is used to determine the content of oxygen, argon, nitrogen, and carbon monoxide.

6.2.3.2 Chromatographic column II. a 2m long stainless steel tube with an inner diameter of 2mm, packed with polymer particles with a particle size of 0.18mm~0.25mm. (Ethylstyrene and divinylbenzene copolymer), or other equivalent chromatographic columns. This column is used for the determination of carbon dioxide, carbon tetrafluoride, and sulfur hexafluoride. content.

6.2.4 Standard Samples When determining grade IV tungsten hexafluoride, the component content in the standard sample should be similar to the corresponding content in the test sample, and the equilibrium gas should be high purity. Helium should comply with the requirements of GB/T 4844. When determining tungsten hexafluoride at grades I, II, and III, the component (molar fraction) content in the standard sample should preferably be 1x10^-6 to 5x10^-6. The helium gas is of high purity and should comply with the requirements of GB/T 4844.

6.2.5 Referenced Gas Flow Diagram The reference gas path flow diagram is shown in Appendix A.

6.3 Determination of silicon tetrafluoride and hydrogen fluoride content

6.3.1 Measurement Method The content of silicon tetrafluoride and hydrogen fluoride in tungsten hexafluoride should be determined according to the method specified in GB/T 46384.1.Other equivalent methods can be used for determination. In the event of any dispute regarding the test results, the method specified in GB/T 46384.1 shall be the arbitration method.

6.3.2 Measurement conditions The reference measurement conditions are as follows:

---Optical path length not less than 5m.

---Silicon tetrafluoride characteristic peak wavenumber. 1790cm-1~1840cm-1.

---Characteristic peak wavenumber of hydrogen fluoride. 3980cm-1~4120cm-1.

---Resolution. 0.5cm-1~2cm-1.

---Ambient temperature. 18°C~25°C.

---Ambient relative humidity. <=60%.

---Other measurement conditions shall be performed in accordance with the instrument instruction manual.

6.3.3 Standard Samples

6.3.3.1 When determining the silicon tetrafluoride content in tungsten hexafluoride, it is advisable to have five gaseous standard samples with different component contents, and the silicon tetrafluoride content... The mole fractions are approximately 0.1 x 10^-6, 0.5 x 10^-6, 1 x 10^-6, 5 x 10^-6, and 10 x 10^-6, respectively. The equilibrium gas is high-purity

helium and should meet the following requirements. The provisions of GB/T 4844.

6.3.3.2 When determining the hydrogen fluoride content in grade I, II, and III tungsten hexafluoride, it is advisable to have three gaseous standard samples with different component contents. The hydrogen content (mole fraction) is approximately 0.1x10^-6, 1x10^-6, and 5x10^-6, respectively. The balance gas is high-purity helium and should conform to GB/T 4844. According to the regulations.

6.3.3.3 When determining the hydrogen fluoride content in grade IV tungsten hexafluoride, it is advisable to have five gaseous standard samples with different component contents. The mole fractions are approximately 50 x 10^-6, 100 x 10^-6, 300 x 10^-6, 500 x 10^-6, and 1000 x 10^-6, respectively. The equilibrium gas is high-purity helium. It conforms to the requirements of GB/T 4844.

6.4 Determination of the content of metallic elements and other elements Perform in accordance with the provisions of GB/T 34972.

6.5 Exhaust Gas Treatment During the measurement, exhaust gas treatment measures should be in place to prevent tungsten hexafluoride from polluting the environment.

7.1 Sampling, Judgment and Re-inspection of Bottled Tungsten Hexafluoride

7.1.1 Tungsten hexafluoride produced continuously and stably on the same production line constitutes a batch, and the quality of each batch does not exceed 5t.

7.1.2 The numerical values of the measurement results shall be rounded and the limit values shall be determined in accordance with the rounding comparison method specified in GB/T 8170.

7.1.3 Grade IV bottled tungsten hexafluoride shall be randomly sampled and inspected according to the sampling quantity specified in Table

3.When the inspection results of each bottle in the sampled specimens are... If all test results meet the technical requirements for this level, the batch of products is deemed (qualified). If any one of the test results fails to meet the technical requirements for this level, the batch is deemed (qualified). If required, double the random sampling should be performed again from the same batch of products for inspection. If the inspection results meet the technical requirements of that level, the remaining products in that batch are deemed acceptable. All products are qualified; if any indicator still fails to meet the technical requirements of this level, the batch of products is deemed unqualified.

7.1.4 All other grades of tungsten hexafluoride shall be inspected and accepted individually. When the inspection results all meet the technical requirements of the corresponding grade of the product, then... The product is deemed (qualified) if any indicator in the inspection results fails to meet the technical requirements for the corresponding product level. The product is substandard.