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

GB/T 16943-2009

Replacing GB/T 16943-1997

Gas for electronic industry -- Helium

电子工业用气体 氦

(English Translation)

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Foreword

This standard replaces GB/T 16943-1997 "Electronic industrial gases helium." this standard and GB/T 16943-1997 compared to the main changes are as follows.

- Modify the scope of helium (GB/T 16943-1997 Chapter 1, Chapter 1 of this edition);
- Modify Normative references (GB/T 16943-1997 of Chapter 2, this version of Chapter 2);
- Modify the content of the technical indicators. increase product purity and a class of impurities (GB/T 16943-1997 Chapter 3, the first edition Chapter 3);
- Bottled helium modify the sampling method (GB/T 16943-1997 4.1, this version 4.1.1);
- Increased manifold Court equipment, large volume seamless steel gas bottles and cans helium Dewar products and provides for testing methods (see 4.1.1);
- Increasing the helium pipeline products and provides for testing methods (see 4.1.2);
- Increasing the sampling helium security requirements (see Section 4.1.3);
- Add a new method of analysis. Determination of helium increases with helium oxygen discharge ionization gas chromatography, carbon monoxide and carbon dioxide group Points; add another method for the determination of total hydrocarbon content; when a variety of analytical methods appears to increase the arbitration process (see 4.3);
- Modify moisture measurement method (GB/T 16945-1997 4.5, this version 4.5);
- Modify signs, packaging, storage and security (GB/T 16943-1997 of Chapter 5, Chapter 5 of this edition);
- Increased safety requirements (see 5.6);
- Increase normative appendix A, and measured by the helium ionization gas chromatography helium, oxygen, nitrogen, carbon monoxide and carbon dioxide group the method of sub-write the appendix (see Appendix A).

Appendix A of this standard is a normative appendix.

This standard by the National Standardization Technical Committee of semiconductor materials and equipment proposed.

This standard by the National Standardization Technical Committee materials and equipment gas branch semiconductors.

This standard was drafted. Southwest Oil and Gas Field Branch Chengdu Natural Gas Chemical Plant, Beijing helium gas-North Cape Industrial Co., Southwest Chemical Engineering Research and Design Institute.

1 Scope

This standard specifies the technical requirements of helium, test methods and packaging, labeling, storage and security.

This standard applies to cryogenically deflated extract gaseous and liquid helium from natural gas, air and plant relaxation and purification methods Helium. They are used in semiconductor manufacturing purge gas, pressurized gas, also used as a carrier gas and protection gas.

Molecular formula. He.

Molecular Weight. 4.003 (according to 2005 international relative atomic mass).

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB 190-2009 dangerous goods packaging logo GB/T 3723 Sampling of chemical products for industrial use General Safety GB 5099 seamless steel gas cylinders GB/T 5832.1 Determination of moisture in the gas electrolysis Determination of GB/T 6285 trace gas oxygen electrochemical GB 7144 cylinders color logo GB/T 8984 of carbon monoxide, carbon dioxide and hydrocarbons by gas chromatography GB 14194 permanent gas cylinders GB 16912 Deep frozen production of oxygen and related gas safety technical regulations Gas Cylinder Safety Supervision Pressure Vessel Safety Supervision Pressure pipeline safety management and monitoring requirements

3 Technical requirements

Quality 3.1 helium should be consistent with the requirements of Table 1.

Table 1 Technical Specifications

Item Index

Helium (He) purity (volume fraction)/10⁻² ≥ 99.9999 99.9995 Carbon monoxide (CO) and carbon dioxide (CO₂) Total amount (volume fraction)/10⁻⁶