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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 5829-2025

Replacing GB/T 5829-2006

Pure krypton, high purity krypton and ultra pure krypton

纯氪、高纯氪和超纯氪

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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 5829-2006 "Krypton". Compared with GB/T 5829-2006, apart from structural adjustments and editorial changes, the main differences are as follows.

The technological changes are as follows.

- Content related to the properties, molecular formula, molecular weight, and uses of krypton has been removed from the scope; content related to ammonia synthesis tail gas and nuclear reactors has been added.

Methods for preparing krypton from fission gas (see Chapter 1, Chapter 1 of the 2006 edition);

- Technical requirements for krypton gas with 99 9995% and 99 9999% purity have been added, requirements for total impurity content have been increased, and some impurity requirements have been modified.

Limits for mineral content (see Chapter 4, Chapter 3 of the 2006 edition);

- The safety requirements for krypton sampling have been changed (see Chapter 5, 4.1.2 of the 2006 edition);

- The method for calculating krypton purity has been changed (see 6.1, 4.2 in the 2006 version);

- The rules for verifying kryptonite have been changed, and provisions for numerical rounding have been added (see Chapter 7, 4.1 of the 2006 edition);

- The methods for determining the carbon monoxide, carbon dioxide, and methane content in krypton gas have been modified, replacing them with helium ionization gas chromatography.

Replace flame ionization gas chromatography (see 6.2, 4.5 of the 2006 edition);

- The method for determining the hydrogen content in krypton was changed, replacing gas-sensitive chromatography with helium ionization gas chromatography (see 6.2, 2006). (4.4 of the 2018 edition)

- The method for determining moisture content has been changed, and equivalent methods specified in GB/T 5832.3 and GB/T 5832.4 have been added to address different...

The purity of krypton specifies the corresponding arbitration method (see 6.3, 4.6 of the 2006 edition);

- Requirements for exhaust gas treatment have been added (see 6.4);

- Added labeling requirements (see 8.2);

- Added requirements for accompanying documents (see 8.3);

- Regulations regarding packaging, filling, transportation, and storage have been amended (see Chapter 9, Chapter 5 of the 2006 edition);

- Added security information regarding Krypton (see Chapter 10).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Petroleum and Chemical Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Gas Standardization (SAC/TC206).

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The release history of this document and the document it replaces is as follows.

- First published in 1986 as GB/T 5829-1986 "Pure Krypton";

- First revised in 1995 as GB/T 5829-1995 "Krypton", and incorporated into GB/T 5830-1986 "Testing of Pure Krypton and Pure Xenon".

The content of the "Methods" (GB/T 5830-1986 was the first publication);

- Revised for the second time in 2006 as GB/T 5829-2006 "Krypton";

- This is the third revision.

1 Scope

This document specifies the technical requirements, sampling, inspection rules, marking, labeling, accompanying documents, packaging, and filling procedures for pure krypton, high-purity krypton, and ultra-pure krypton.

The requirements for packaging, transportation, and storage are described, relevant test methods are explained, and safety information for krypton is provided.

This document applies to the separation and purification of gases from air, ammonia synthesis tail gas, or nuclear reactor fission gas using cryogenic methods.

Pure pay-to-win, high-pure pay-to-win, and super-pure pay-to-win.

2 Normative references

GB 190

GB/T 191

GB/T 4844

GB/T 4946

GB/T 5099

GB/T 5832.1

GB/T 5832.2

GB/T 5832.3

GB/T 5832.4

GB 6388

GB/T 7144

GB/T 8170

GB/T 11640

GB/T 14194

GB/T 14850

GB 15258

GB/T 16483

GB/T 16804

GB/T 27550

GB/T 28726

GB/T 30685

GB/T 34525

GB/T 43306

3 Terms and Definitions

The terms and definitions defined in GB/T 4946 and GB/T 14850 apply to this document.

4 Technical Requirements

The technical requirements for pure krypton, high-purity krypton, and ultra-pure krypton shall comply with the provisions of Table 1.

Table 1 Technical Requirements project index Pure Krypton High Purity Krypton Ultra Pure Krypton Krypton (Kr) purity (mole fraction). >=99.99% >=99.995% >=99.999% >=99 9995% >=99 9999% Nitrogen (N2) content (mole fraction). <=20x10-6, <=9x10-6, <=2x10-6, <=1.5x10-6, <=0.2x10-6 [Oxygen (O2) Argon (Ar)] Content (mole fraction) <=5x10-6 <=5x10-6 <=1.5x10-6 <=1.0x10-6 <=0.2x10-6 Hydrogen (H2) content (mole fraction). <=2x10-6, <=1x10-6, <=0.5x10-6, <=0.2x10-6, <=0.1x10-6 Carbon monoxide (CO) content (mole fraction). <=1x10-6, <=0.4x10-6, <=0.3x10-6, <=0.2x10-6, <=0.05x10-6 Carbon dioxide (CO2) content (mole fraction). <=1x10-6, <=0.8x10-6, <=0.4x10-6, <=0.2x10-6, <=0.05x10-6 Methane (CH4) content (mole fraction). <=1x10-6, <=0.8x10-6, <=0.3x10-6, <=0.2x10-6, <=0.1x10-6 Moisture (H2O) content (mole fraction). <=5x10-6, <=3x10-6,