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

GB/T 17873-2025

Replacing GB/T 17873-2014

Pure neon ,high purity neon and ultra pure neon

纯氖、高纯氖和超纯氖

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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 17873-2014 "Pure Neon and High-Purity Neon". Compared with GB/T 17873-2014, the only changes are structural adjustments and editing. Aside from the sexual alterations, the main technical changes are as follows:

---Content related to the uses, properties, molecular formula, and relative molecular weight of xenon has been removed from the scope (see page 1 of the 2014 edition). chapter);

---Requirements for neon gas with 99.9995% and 99.9999% purity have been added, and the limits for some impurity content have been changed (see section 4). Chapter 3 (2006 edition);

---Added requirements for neon gas sampling and sampling safety (see Chapter 5);

---The technical requirements have been revised (see Table 1, 2014 version of Table 1);

---The method for calculating neon purity has been changed (see 6.1, 4.2 in the 2014 edition);

---The conditions for determining the helium content in neon gas and the symbols in the helium content calculation formula have been changed (see Appendix A, 2014 edition). 4.3);

---The method for determining the hydrogen content in neon gas has been changed (see

6.3,

4.4 in the.2014 edition);

---A method for determining the total hydrocarbon content in neon gas has been added (see 6.4);

---The method for determining moisture content has been changed (see 6.5, 4.6 in the.2014 edition);

1 Scope

GB/T 17873-2025 is the Chinese national standard on pure neon ,high purity neon and ultra pure neon, in the field of chemical technology. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 29 August 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 March 2026. Classification: ICS 71.100.20, CCS G86. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the technical requirements, sampling, test methods, inspection rules, marking, labeling, and accompanying documents for pure neon, high-purity neon, and ultra-pure neon. Requirements for components, packaging, filling, transportation, and storage are described, methods for determining the impurity content of pure neon, high-purity neon, and ultra-pure neon are provided, and safety guidelines for neon gas are offered. Full information. This document applies to pure neon, high-purity neon, and ultrapure neon extracted using cryogenic extraction.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB 190 Packaging Marks for Dangerous Goods

GB/T 191 Pictorial Symbols for Packaging and Storage GB/T 4842 Argon

GB/T 4844 Pure Helium, High-Purity Helium and Ultra-Purity Helium

GB/T 4946 Gas Chromatography Terminology

GB/T 5099 (all parts) Seamless steel gas cylinders

GB/T 5832.1 Gas analysis - Determination of trace moisture - Part

3 Terms and Definitions

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

4. Technical Requirements It should comply with the provisions of Table 1. Table

1 Technical Requirements project index Pure neon, high-purity neon, ultra-pure neon Neon (Ne) purity (mole fraction). $\geq 99.99\%$ $\geq 99.995\%$ $\geq 99.999\%$ $\geq 99.9995\%$ $\geq 99.9999\%$ Helium (He) content (mole fraction). $\leq 75 \times 10^{-6}$, $\leq 35 \times 10^{-6}$, $\leq 4 \times 10^{-6}$, $\leq 2 \times 10^{-6}$, $< 0.5 \times 10^{-6}$ Hydrogen (H₂) content (mole fraction). $\leq 5 \times 10^{-6}$, $\leq 3 \times 10^{-6}$, $\leq 1 \times 10^{-6}$, $\leq 0.5 \times 10^{-6}$, $< 0.1 \times 10^{-6}$ [Oxygen (O₂) + Argon (Ar)] content (mole fraction) $\leq 2 \times 10^{-6}$ $\leq 2 \times 10^{-6}$ $\leq 1 \times 10^{-6}$ $\leq 0.5 \times 10^{-6}$ $< 0.1 \times 10^{-6}$

6 Nitrogen (N₂) content (mole fraction). $\leq 10 \times 10^{-6}$, $\leq 5 \times 10^{-6}$, $\leq 2 \times 10^{-6}$, $\leq 1.0 \times 10^{-6}$, $< 0.2 \times 10^{-6}$ Carbon monoxide (CO) content (mole fraction). $\leq 1 \times 10^{-6}$, $\leq 0.2 \times 10^{-6}$, $\leq 0.1 \times 10^{-6}$, $< 0.05 \times 10^{-6}$ Carbon dioxide (CO₂) content (mole fraction). $\leq 1 \times 10^{-6}$, $\leq 0.2 \times 10^{-6}$, $\leq 0.1 \times 10^{-6}$, $< 0.05 \times 10^{-6}$ Total hydrocarbon content [expressed as methane (CH₄) content] (moles) Fraction) $\leq 1 \times 10^{-6}$ $\leq 1 \times 10^{-6}$ $\leq 0.1 \times 10^{-6}$ $\leq 0.1 \times 10^{-6}$ $< 0.05 \times 10^{-6}$ Moisture (H₂O) content (mole fraction). $\leq 5 \times 10^{-6}$, $\leq 2 \times 10^{-6}$, $\leq 1.5 \times 10^{-6}$, $\leq 0.7 \times 10^{-6}$, $< 0.1 \times 10^{-6}$ Total impurity content (mole fraction). $\leq 100 \times 10^{-6}$, $\leq 50 \times 10^{-6}$, $\leq 10.0 \times 10^{-6}$, $\leq 5.0 \times 10^{-6}$, $\leq 1.0 \times 10^{-6}$

5. Sampling The technical requirements for pure neon, high-purity neon, and ultra-pure neon shall comply with the provisions of GB/T 43306.

4 Quartz crystal oscillation method

GB/T 6388 Transport Packaging Receipt and Delivery Marks

GB/T 7144 Color Marking for Gas Cylinders

GB/T 8170 Rules for rounding off numerical values and the representation and determination of limiting values

GB/T 8979 Pure Nitrogen, High-Purity Nitrogen and Ultra-Purity Nitrogen

GB/T 8984 Gas Analysis - Determination of Trace Carbon Monoxide, Carbon Dioxide and Hydrocarbons in Gases - Flame Ionization Gas chromatography

GB/T 11640 Seamless Aluminum Alloy Gas Cylinders

GB/T 14194 Regulations for Filling Compressed Gas Cylinders

GB/T 14850 Glossary of Gas Analysis

GB 15258 Regulations for Writing Safety Labels for Chemicals

GB/T 16483 Contents and Item Order of Safety Data Sheets for Chemicals

GB/T 16804 Warning Labels for Gas Cylinders

GB/T 28054 Seamless steel gas cylinder bundling device

GB/T 28726 Gas Analysis - Helium Ionization Gas Chromatography

GB/T 30685 Technical requirements for upright road transportation of gas cylinders

6.1 Calculation of purity for pure neon, high-purity neon, and ultra-pure neon

6.1.1 The total impurity content in pure neon, high-purity neon, and ultra-pure neon should be calculated according to formula (1). $x_9 = x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7 + x_8$ (1) In the formula. x_1

--- Helium content (mole fraction); x_2

--- Hydrogen content (mole fraction); x_3

--- (Oxygen and Argon) content (mole fraction); x_4

--- Nitrogen content (mole fraction); x_5

--- Carbon monoxide content (mole fraction); x_6

--- Carbon dioxide content (mole fraction); x_7

--- Total hydrocarbon content (mole fraction); x_8

--- Moisture content (mole fraction); x_9

--- Total impurity content (mole fraction).

6.1.2 Calculation of purity for pure neon and high-purity neon The purity of pure neon and high-purity neon should be calculated according to formula (2). $x = (1 - x_9) \times 100\%$ (2) In the formula. x

--- Purity (mole fraction) of pure neon and high-purity neon.

6.2 Determination of Helium Content in Neon Gas

6.2.1 Thermal conductivity gas chromatography The determination of helium was performed using the thermal conductivity gas chromatography method specified in Appendix A. The detection limit for helium was 0.2×10^{-6} (mole fraction).

6.2.2 Equivalent Methods and Arbitration Methods Other equivalent methods are permitted for determining the helium content in neon gas. In case of disagreement with the determination results, the method specified in