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

GB/T 14599-2025

Replacing GB/T 14599-2008

Pure oxygen, high purity oxygen and ultra pure oxygen

纯氧、高纯氧和超纯氧

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Table of Contents

- 1 Scope
- 2 Normative references
- 3 Cavity Ring-down Spectroscopy
- 6 Test Methods
- 6.1 Purity of pure oxygen, high-purity oxygen, and ultrapure oxygen
- 6.1.1 Calculation of total impurity content

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 14599-2008 "Pure Oxygen, High-Purity Oxygen and Ultra-Purity Oxygen". Compared with GB/T 14599-2008, the only changes are structural adjustments. Aside from editorial changes, the main technical changes are as follows:

- The scope has been changed (see Chapter 1, Chapter 1 of the.2008 edition);
- The technical requirements for pure oxygen, high-purity oxygen, and ultrapure oxygen have been revised (see Chapter 4, Chapter 3 of the.2008 edition);
- Sampling rules have been added (see Chapter 5);
- The calculation methods for the purity of pure oxygen, high-purity oxygen, and ultrapure oxygen have been changed (see 6.1, 4.2 of the.2008 edition);
- The methods for determining the content of argon, nitrogen, and carbon dioxide have been revised (see 6.2, 4.4 of the.2008 edition);
- A method for determining hydrogen content has been added (see 6.2);
- The method for determining total hydrocarbon content has been changed (see 6.3, 4.5 in the.2008 edition);
- The method for determining moisture content has been changed (see 6.4, 4.6 in the.2008 edition);

1 Scope

GB/T 14599-2025 is the Chinese national standard on pure oxygen, high purity oxygen and ultra pure oxygen, 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, testing methods, inspection rules, marking, packaging, transportation, and storage of pure oxygen, high-purity oxygen, and ultrapure oxygen. The requirements for storage provide safety information on pure oxygen, high-purity oxygen, and ultrapure oxygen. This document applies to pure oxygen, high-purity oxygen, and ultrapure oxygen in gaseous and liquid states, obtained by separation from air and by water electrolysis.

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 3863 Industrial Oxygen

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

GB/T 5832.3 Gas Analysis - Determination of Trace Moisture in Gases - Part

3 Cavity Ring-down Spectroscopy

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 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 15258 Regulations for Writing Safety Labels for Chemicals

GB/T 16804 Warning Labels for Gas Cylinders

GB/T 24159 Welded Insulated Gas Cylinders

GB/T 28726 Gas Analysis - Helium Ionization Gas Chromatography

GB/T 33145 Large-capacity seamless steel gas cylinders

GB/T 34528 Filling Specifications for Gas Cylinder Bundles

GB/T 43306 Sampling Guidelines for Gas Analysis

JB/T 6898 Safety Rules for the Use of Cryogenic Liquid Storage and Transportation Equipment
TSGR0005 Safety Technical Supervision Regulations for Mobile Pressure Vessels TSG

23 Gas Cylinder Safety Technical Regulations

6.1.1 Calculation of total impurity content

6.1.1.1 The total impurity content in gaseous pure oxygen, high-purity oxygen, and ultrapure oxygen is calculated according to formula (1). $x_7 = x_1 x_2 x_3 x_4 x_5 x_6$ (1) In the formula. x_1

--- Hydrogen content (mole fraction); x_2

--- Argon content (mole fraction); x_3

--- Nitrogen content (mole fraction); x_4

--- Carbon dioxide content (mole fraction); x_5

--- Total hydrocarbon content (mole fraction); x_6

--- Moisture content (mole fraction); x_7

--- Total impurity content (mole fraction) in gaseous pure oxygen, high-purity oxygen, and ultrapure oxygen.

6.1.1.2 The total impurity content in liquid pure oxygen, high-purity oxygen, and ultrapure oxygen is calculated according to formula (2). $x_8 = x_1 x_2 x_3 x_4 x_5$ (2) In the formula. x_8

--- Total impurity content (mole fraction) in liquid pure oxygen, high-purity oxygen, and ultrapure oxygen.