

ICS 71.100.20
CCS G 86



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

GB/T 31986-2026

Replacing GB/T 31986-2015

Electronic gas - Octafluoropropane

电子气体 八氟丙烷

Issued on: April 30, 2026

Implemented on: November 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

6 Test Methods

6.1 Purity of octafluoropropane

6.1.1 Total impurity content

6.2.2 Pre-separation column

6.2.3 Chromatographic column

6.4 Determination of Hydrogen Fluoride Content

7 Inspection Rules

7.1 Sampling, Judgment and Retesting of Bottled Octafluoropropane

8 Marking, Packaging, Transport, Storage and Safety Information

8.1 Marking

8.2 Packaging, Transportation and Storage

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 31986-2015 "Octafluoropropane for Electronic Industry". Compared with GB/T 31986-2015, the following changes are made. 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 octafluoropropane have been revised (see Chapter 4, Chapter 3 of the 2015 edition);
- c) The sampling requirements have been changed (see Chapter 5, 4.1.2 of the 2015 edition);
- d) The method for calculating purity has been changed (see 6.1, 4.2 of the 2015 edition);
- e) The following parameters have been changed. oxygen (argon), nitrogen, carbon monoxide, carbon dioxide, methane, carbon tetrafluoride, hexafluoroethane, hexafluoropropylene, heptafluoropropane, and octafluorocarbon. Methods for determining cyclobutane content (see 6.2,

4.4 of the.2015 edition);

f) A method for determining the content of pentachlorofluoroethane has been added (see 6.2);

g) The method for determining moisture content has been changed (see 6.3, 4.5 in the.2015 edition);

h) The method for determining hydrogen fluoride content has been changed (see 6.4,

6.1.1 Total impurity content

6.1.2 Purity The purity of octafluoropropane is calculated according to formula (2).

6.2 Oxygen, Argon, Nitrogen, Carbon Monoxide, Carbon Dioxide, Methane, Carbon Tetrafluoride, Pentachlorofluoroethane, Hexafluoroethane, Hexafluoropropylene, Heptafluoropropane, Determination of octafluorocyclobutane content

6.2.1 Determination Method The determination of oxygen, argon, nitrogen, carbon monoxide, carbon dioxide, methane, carbon tetrafluoride, and chlorine in octafluoropropane according to the method specified in GB/T 28726 Contents of pentafluoroethane, hexafluoroethane, hexafluoropropylene, heptafluoropropane, and octafluorocyclobutane. Other equivalent methods can be used for determination. When the determination results... In case of any objection, the arbitration method specified in GB/T 28726 shall be adopted.

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 carbon with a particle size of 0.18mm~0.25mm. Molecular sieves, or other equivalent pre-separation columns, can be used.

6.2.2.2 Pre-separation column II. A stainless steel tube 0.6m long with an inner diameter of approximately 2mm, filled with silica gel with a particle size of approximately 0.18mm~0.25mm. Or other equivalent pre-separation columns.

6.2.3 Chromatographic column

6.2.3.1 Chromatographic column I. 1.5m long, 3mm inner diameter 316L stainless steel tube, packed with 5A fractions 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, carbon monoxide, and methane.

6.2.3.2 Chromatographic column II. a 2m long, 2mm inner diameter stainless steel tube packed with modified carbon molecular sieves with a particle size of 0.18mm~0.25mm. Or other equivalent chromatographic columns. This column is used to determine the content of carbon tetrafluoride.

6.2.3.3 Chromatographic column III. A 2m long, 2mm inner diameter stainless steel tube, packed with polymer material (ethylene) with a particle size of 0.18mm~0.25mm. A copolymer of styrene and divinylbenzene (or other equivalent chromatographic columns). This column is used to determine the content of carbon dioxide and hexafluoroethane.

6.2.3.4 Chromatographic column IV. a 4m long, 2mm inner diameter stainless steel tube, packed with polymer material (ethyl acetate) with a particle size of 0.18mm~0.25mm. A copolymer of styrene and divinylbenzene (or other equivalent chromatographic columns). This column is used to determine pentachlorofluoroethane, hexafluoropropylene, and heptafluoropropylene. Content of alkylene and octafluorocyclobutane.

6.2.4 Standard Samples The component content (mole fraction) in the standard sample should preferably be 1×10^{-6} to 5×10^{-6} , and the balance gas should be high-purity helium, conforming to GB/T 4844. Regulation.

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

6.3 Determination of Moisture Content Perform the test according to GB/T 5832.1, GB/T 5832.2, or GB/T 5832.3. In case of any dispute regarding the test results, GB/T 5832.3 shall prevail. The prescribed method is arbitration.

6.4 Determination of Hydrogen Fluoride Content

6.4.1 Measurement Method The hydrogen fluoride content in octafluoropropane should be determined according to the method specified in GB/T 46384.1. Other equivalent methods may be used for determination, depending on the specific requirements. In case of disagreement regarding the determination result, the method specified in GB/T 46384.1 shall be the arbitration method.

6.4.2 Measurement conditions The reference measurement conditions are as follows:

---Characteristic peak wavenumber of hydrogen fluoride. 4107 cm^{-1} ~4112 cm^{-1} .

---Resolution. 0.5 cm^{-1} .

---Ambient temperature. 18°C~25°C.

---Ambient relative humidity. $\leq 60\%$.

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

6.4.3 Standard Samples For the determination, it is advisable to have three gaseous standard samples with different component contents, and the hydrogen fluoride content should be approximately 0.1×10^{-6} (mole fraction), 1×10^{-6} (mole fraction) or 5×10^{-6} (mole fraction), the balance gas is high-purity helium, and should comply with the provisions of GB/T 4844.

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

7.1 Sampling, Judgment and Retesting of Bottled Octafluoropropane

7.1.1 Bottled octafluoropropane products produced continuously and stably on the same production line constitute a batch.

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 The content of each component except hydrogen fluoride should be tested individually. If all test results meet the technical requirements, the product is deemed (qualified). If any indicator in the inspection results fails to meet the technical requirements, the product is deemed unqualified.

7.1.4 Hydrogen fluoride shall be randomly sampled and inspected according to the sampling quantity specified in Table

2. When the inspection results all meet the technical requirements, the batch of products shall be deemed (qualified/compliant). If any indicator in the inspection results fails to meet the technical requirements, the random sampling should be doubled from the same batch of products for re-inspection. If the inspection results fail to meet the technical requirements... If the test results meet the technical requirements, then the batch of products is considered (qualified) except for the non-compliant bottle; if the test results still do not meet the technical requirements, then... The batch of products was deemed substandard.

7.2 Sampling and Judgment of Octafluoropropane in Containerized and Tank Truck Packaging For octafluoropropane products packaged in containers or tank trucks, each product should be inspected and accepted individually. If all inspection results meet the technical requirements, the product is deemed acceptable. The product is considered (qualified). If any indicator in the inspection results fails to meet the technical requirements, the product is deemed (unqualified).

8.1 Marking

8.1.1 Octafluoropropane shall be accompanied by a product quality certificate upon leaving the factory, the contents of which shall at least include.

---Product name, manufacturer's name, hazardous chemical production license number;

---Production date or batch number, and shelf life;

---Fill weight (kg);