

ICS 13.340.30
CCS C 73



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

GB/T 31975-2015

**Technical Requirements of Compressed Air for Respiratory
Protection**

呼吸防护用压缩空气技术要求
(English Translation)

Issued on: September 11, 2015

Implemented on: October 1, 2016

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Foreword...	3
1 Scope...	4
2 Normative References...	4
3 Terms and Definitions...	4
4 Technical Requirements...	5
5 Test Methods...	5
6 Collecting Requirements for Gaseous Samples...	6

Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Standard was proposed by State Administration of Work Safety.

This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Personal Protection (SAC/TC 112).

Drafting organizations of this Standard: China Academy of Safety Science and Technology; Research Institute of Chemical Defense, General Armaments Department; Quartermaster Equipment Research Institute of the General Logistic Department; MSA (China) Safety Equipment Co., Ltd.; and Draeger Safety Equipment (China) Co., Ltd.

Chief drafting staffs of this Standard: Zhang Mingming, Ding Songtao, Fu Yahui, Dong Huijun, Yao Haifeng, Chang Hong, Yang Xiaobing, Zhang Huijun, and Zhu Hua.

Technical Requirements of Compressed Air for
Respiratory Protection

1 Scope

This Standard specifies the quality indicators and test methods of compressed air for respiratory protection.

This Standard is applicable to self-contained open-circuit compressed air breathing apparatus and compressed air line breathing apparatus for occupational protection

and escape.

This Standard is not applicable to compressed air for medical use, breathing equipment for diving and compressed air for aviation breathing equipment

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 3863-2008 Industrial Oxygen

GB/T 5832.2 Determination of Moisture in Gases - Part 2: Dew Point Method

GB/T 8984 Determination of Carbon Monoxide Carbon Dioxide and Hydrocarbon in Gases - Gas Chromatographic Method

GB/T 18204.2-2014 Examination Methods for Public Places - Part 2: Chemical Pollutants

3 Terms and Definitions

For the purpose of this document, the following terms and definitions apply.

3.1 Dew point

At constant pressure, the temperature at which the moisture in the gas reaches saturation and condenses into dew or frost (ice).

3.2 Dew point method

A method of measuring the dew point of the gas to reflect the moisture content of compressed air.

3.3 Atmospheric dew point

Dew point of compressed air measured at atmospheric pressure.

4 Technical Requirements

The quality of compressed air for respiratory protection shall meet the requirements of various indicators in Table 1.

Table 1 -- Quality Indicators of Compressed Air for Respiratory Protection

Table 1 - Continued

5.1.1 The determination of the oxygen content in compressed air should adopt the

copper ammonia solution absorption method, and implement according to the provisions of 4.2 in GB/T 3863-2008;

5.1.2 The oxygen content in the compressed air may also be measured by paramagnetic analyzers, electrochemical analyzers and other instrumental analysis methods. The accuracy of the instrument is at least $\pm 0.2\%$ oxygen (absolute value).

5.2 Determination of carbon monoxide

Quality indicators Indicator requirements a

Oxygen

Carbon monoxide

Carbon dioxide

19.5% (volume fraction) ~ 23.5% (volume fraction)

Quality indicators Indicator requirements a

Dew point

Oil mist and particulate matter

Peculiar smell No obvious peculiar smell

a The requirements for each indicator is the value under the standard state (20°C, 101.3 kPa).

5.2.1 The determination of carbon monoxide content may adopt the catalytic methanation gas chromatography, and implement in accordance with the provisions of GB/T 8984;

5.2.2 The determination of carbon monoxide content may also use non-spectroscopy

infrared gas analysis method, and implement according to 3.1 in GB/T 18204.2-2014.

5.3.1 The determination of carbon dioxide content may adopt the catalytic methanation

gas chromatography, and implement in accordance with the provisions of GB/T 8984;

5.3.2 The determination of carbon dioxide content may also use non-spectroscopy

infrared gas analysis method, and implement according to 4.1 in GB/T 18204.2-2014.

5.4 Determination of oil mist and particulate matter

The sample collection and determination of oil mist and particulate matter content shall filter adopt the filter weighing method, and implement in accordance with the method specified in Appendix A.

5.5 Determination of dew point

The determination of the dew point is performed in accordance with the provisions of GB/T 5832.2.

6 Collecting Requirements for Gaseous Samples

When on-site testing is not convenient, gaseous samples shall be collected in accordance with the following requirements:

- a) The collected gaseous samples shall be representative of the compressed air supplied by normal production;
- b) Sample containers shall be filled at the same time and in the same filling position in the same way;
- c) The gas shall be collected from the same gas supply container into the sample container through an appropriate connection; and the regulator shall not be connected between the gas supply container and the sample container (allowing the use of a control valve);