

JIS

JAPANESE INDUSTRIAL STANDARD

Oxygen-Generating Closed-Circuit Breathing Apparatus

JIS T 8156—1988

Translated and Published

by

Japanese Standards Association

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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1. Scope

This Japanese Industrial Standard specifies the oxygen-generating closed-circuit breathing apparatus, hereinafter referred to as the "breathing apparatus" to be used in cases where the impediment to human body is liable to be caused by inhalation of oxygen deficient air or gas, vapor, particular matters etc. in establishments such as mines, factories, etc., disaster spots, ships and the like.

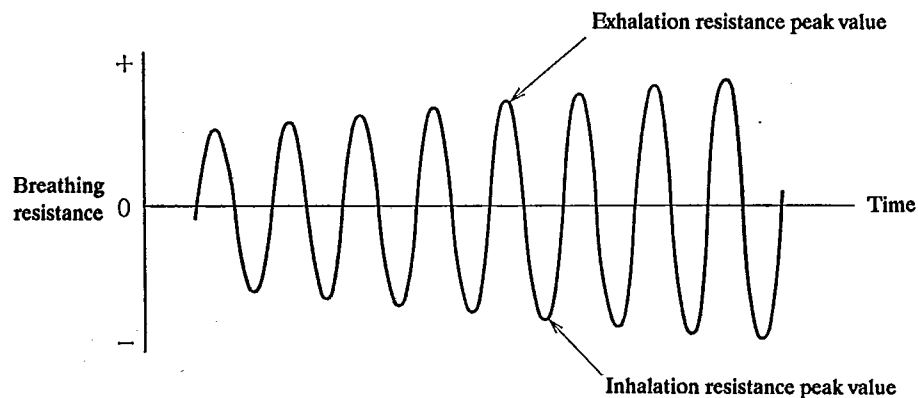
Remark: The units and numerical values given in { } in this Standard are based on the traditional unit system and are currently the criteria in force.

2. Definitions

For the purpose of this Standard, the following definition apply. Other terms and definitions are given in JIS T 8001.

exhalation resistance peak value and inhalation resistance peak value The breathing resistance when the breathing apparatus is worn to breathe or when the breathing apparatus is connected with breathing simulator to be actuated changes with time as shown in Fig. 1. In this case, for each wave, the maximum value in plus side is designated as exhalation resistance peak value and the maximum value in minus side as inhalation resistance peak value.

Fig. 1



Applicable Standards:

JIS C 1602-Thermocouples

JIS K 0098-Methods for Determination of Carbon Monoxide in Flue Gas

JIS K 0106-Methods for Determination of Chlorine in Exhaust Gas

JIS T 8001-Glossary of Terms Relating to Respiratory Protective Equipments

JIS T 8152-Gas Masks

JIS T 8159-Leakage Rate Testing Method for Facepieces of Respirators

3. Classification

The breathing apparatus shall be classified into two types of type in which the sodium chlorate is burned to be decomposed with using iron oxide as moderating catalyst to generate continuously oxygen (hereinafter, referred to as the "Type C") and type in which the potassium hyperoxide reacts with water vapor and carbon dioxide in exhalation to generate oxygen and to remove carbon dioxide (hereinafter referred to as the "Type K").

4. Performances4.1 General Performances

4.1.1 Airtightness The airtightness shall comply with the following specifications.

- (1) Breathing Apparatus Excluding Face Piece When tested according to 7.1.1 (1), the pressure drop shall be 100 Pa {10 mm H₂O} or less.
- (2) Face Piece When the airtightness of face piece is tested according to 7.1.1 (2), the leakage shall not be discerned.

4.1.2 Inhalation Air The inhalation air shall comply with the following specifications:

- (1) Carbon Dioxide Concentration The carbon dioxide concentration in inhalation air tested according to 7.1.2 (1) shall be 3 % or less during test.
- (2) Inhalation Air Temperature The inhalation air temperature tested according to 7.1.2 (2) shall not rise from exhalation air temperature by more than 13°C during nominal service time.
- (3) Concentrations of Carbon Monoxide and Chlorine The concentrations of carbon monoxide and chlorine tested according to 7.1.2 (3) at optional time during nominal service time shall not exceed 50 ppm and 1 ppm in each. However, in the case of construction without possibility to generate carbon monoxide and chlorine, this specification does not apply.

4.1.3 Breathing Resistance The breathing resistance, when tested according to 7.1.3, shall be 500 Pa {50 mm H₂O} or less in inhalation resistance peak value and 1 kPa {100 mm H₂O} or less in exhalation resistance peak value during test.

4.1.4 Heat Resistance of Breathing Apparatus When the breathing apparatus is tested according to 7.1.4, every part shall be free from abnormalities such as stickiness, cracks, etc.

4.1.5 Low Temperature Resistance of Breathing Apparatus The breathing apparatus, when tested according to 7.1.5, every part shall be free from abnormalities such as cracks, and the like.

4.2 Performance of Each Part

4.2.1 Leakage Rate of Face Piece The face piece, when tested according to JIS T 8159, shall conform to Grade AAA or Grade AA.

4.2.2 Oxygen-Generating Capacity of Oxygen-Generating Canister The oxygen-generating capacity of oxygen-generating canister, (including initial oxygen-generating device, same hereinafter,) shall comply with the following specifications:

- (1) Type C Oxygen-Generating Canister The amounts of generated oxygen, when tested according to 7.2.1 (1), shall be 3 l or over in initial 30 sec., 5 l or over in 60 sec. and hereafter 2.5 l/min or over during nominal service time.
- (2) Type K Oxygen-Generating Canister The amount of generated oxygen, when tested according to 7.2.1 (2), shall be 3 l or over in initial 30 sec., 5 l or over in 60 sec. and hereafter 1.6 l/min or over during nominal service time.

4.2.3 Actuation of Automatic Relief Valve When the test is conducted according to 7.2.2, the operation initiating pressure shall be 200 to 500 Pa {20 to 50 mm H₂O}.

4.2.4 Actuation of Warning Device When the warning device to be used for Type C is tested according to 7.2.3, the device shall detect the decrease of air amount to flow rate 1.0 to 1.5 l/min to generate warning sound and when the air amount recovers the original value, immediately shall stop the warning sound.