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Respiratory protective devices — Terms, definitions, graphical symbols and units of measurement

Appareils de protection respiratoire — Termes, définitions, symboles graphiques et unités de mesure

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Foreword

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ISO 16972 was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 15, *Respiratory protective devices*.

Respiratory protective devices — Terms, definitions, graphical symbols and units of measurement

1 Scope

This International Standard is applicable to respiratory protective devices. It defines commonly used terms and specifies units of measurement to achieve a uniform interpretation and to prevent ambiguous use. It indicates graphical symbols that may be required to be placed on respiratory protective devices (RPD) or parts of RPD or instruction manuals, in order to instruct the person(s) using the RPD about its operation.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7000:2004, *Graphical symbols for use on equipment — Index and synopsis*

IEC 80416-1[1)], *Basic principles for graphical symbols for use on equipment — Part 1: Creation of graphical symbols for registration*

ISO 80416-2[2)], *Basic principles for graphical symbols for use on equipment — Part 2: Form and use of arrows*

3 Terms and definitions

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

NOTE The terms are listed in alphabetical order. Terms which refer to current RPD are not listed in these definitions because they are design related and are described in Annex A. Bold type used within a definition identifies terms defined elsewhere in this list of preferred terms.

3.1
abrasion resistance
ability of an **RPD** and/or its components to withstand degradation from abrasive effects (e.g. scratch, scrape, scuff)

3.2
abrasive blasting respiratory protective device
device designed to protect the wearer from inhalation of, impact of, and abrasion by materials used or generated in abrasive blasting

3.3
accessory
item, or items, that are attached to the **RPD** that are not necessary for the RPD to meet the requirements of the ISO RPD performance standard and do not compromise its protection

3.4
adequacy assessment
selection method identifying **RPD** able to reduce the wearer's hazard exposure to acceptable levels

3.5
aerodynamic diameter
diameter of a unit density sphere having the same settling velocity as the particle in question

3.6
aerosol
suspension of solid, liquid or solid and liquid particles in a gaseous medium

3.7
aerosol penetration
ability of particles to pass through a particle filtering material

3.8
air flow resistance
pressure difference between upstream and downstream locations caused by the flow of air through parts and components of RPD such as, an exhalation valve, inhalation valve, filter(s), and tube, etc.

1) Cancels and replaces ISO 3461-1:1988.

2) Cancels and replaces ISO 4196:1984.

3.9
air-purifying respiratory protective device
device in which ambient air is passed through an air-purifying element(s) that remove(s) the contaminant(s)

NOTE Air is passed through the air-purifying element by means of the breathing action or by a blower.

3.10
ambient air bypass
means to enable the wearer to breathe the **ambient atmosphere** before entering and after leaving a hazardous atmosphere

3.11
ambient air system
device used to deliver ambient air at a low pressure directly to an atmosphere supplying **RPD** (manually or power assisted)

3.12
ambient atmosphere
air surrounding the **RPD** wearer

3.13
ambient concentration
concentration of a compound in the air surrounding the **RPD** wearer

3.14
ambient laboratory conditions
atmosphere where the temperature is between 16 °C and 32 °C and the relative humidity is between 20 % and 80 %

3.15
atmospheric contaminant
potentially harmful substance that is present in unacceptably high concentration in the ambient air, and to which workers may be exposed in their working environment

3.16
atmospheric dew point
temperature at which moisture begins to condense from a gas as the gas is cooled at standard atmospheric pressure. (1 013,25 hPa)

3.17
biological monitoring
analysis of exhaled air, a biological fluid (e g., urine, blood, perspiration), or a body tissue (e g., hair, nails) to assess the extent to which an individual has been exposed to a contaminant/hazard

3.18
body harness
means to enable a wearer to wear certain components of an **RPD** on the body

3.19
breakthrough concentration
concentration of test gas in effluent air at which a **gas filter** undergoing a gas filter capacity test is deemed exhausted

3.20
breakthrough curve
graph for gas filter(s) showing the relationship between effluent concentration of the test substance versus time of **gas filter**(s)

3.21
breakthrough time
time from the start of a **gas filter** capacity test to the time when the **breakthrough concentration** has been reached in effluent air under the defined conditions

3.22
breakthrough time curve
graph showing the relationship between **test concentration** and **breakthrough time** for **gas filter**(s)

3.23
breathable gas
mixtures of gases that are suitable for respiration without adverse effects to health

3.24
breathable gas cylinder
integral part of the **RPD** that contains the **breathable gas** supply

3.25
breathable gas quality
composition of a breathable gas as defined in relevant standards

3.26
breath cycle
time period comprised of one inhalation and one exhalation sequence

3.27
breathing bag
component of an **RPD** which compensates for variations in the **breathable gas** supply or demand and provides for peak inhalation flow requirements

3.28
breathing gas regeneration
process whereby an RPD absorbs carbon dioxide in exhaled gas and delivers oxygen, controls water vapour and temperature of gas to be rebreathed

3.29
breathing machine
ventilation machine that simulates respiratory ventilation by using waveforms, which can be sinusoidal or representative of the inhalation and exhalation cycle

NOTE See also **metabolic simulator**.

3.30
breathing peak resistance
maximum differential pressure of an **RPD** during inhalation (inhalation peak resistance) or exhalation (exhalation peak resistance)

3.31
breathing resistance
pressure differential between upstream and downstream location caused by an **RPD** to the flow of breathable gas during inhalation (inhalation resistance) or exhalation (exhalation resistance)

3.32
BTPS
body temperature pressure saturated
standard condition for the expression of ventilation parameters

EXAMPLE Body temperature (37 °C),atmospheric pressure (1 013,25 hPa) and saturated air (vapour pressure = 62,66 hPa).

3.33
buddy breathing
practice that enables a second person to simultaneously share the same **breathable gas** supply as that of the wearer of such **RPD** while both persons are attempting to move to a safe location

3.34
bypass valve
component part of an **RPD**, which is furnished as an emergency manual valve to supply necessary **breathable gas** when the ordinary supply path is out of order

3.35
CO_2 concentration limits
maximum allowed concentration of carbon dioxide within inhaled **breathable gas**

3.36
char length
length of brittle residue found when a fabric or material is exposed to thermal energy

3.37
checking device
characteristic of **RPD** to enable the wearer to verify, before use or periodically during use, that the manufacturer's minimum design conditions are met

3.38
cleaning/disinfection resistance
ability of the device to withstand cleaning and disinfection processes defined by the manufacturer

3.39
clogging
accumulation of particles on a filter with a consequent increase in its resistance to flow

3.40
combination filter
filter intended to remove dispersed solid and/or liquid particles and specified gases and vapours from the flow of air passing through it

3.41
combined RPD
RPD which are capable to operate in either filtering or breathable gas supply mode

3.42
communication performance
ability of wearer to communicate face to face with others at a given distance

3.43
compatibility
ability of **RPD** to be used in conjunction with other PPE

3.44
competent person
person with suitable and sufficient experience and with practical and theoretical knowledge of the elements of an **RPD programme** for which (s)he is responsible

3.45
confined space
area with limited access, as described in national regulations, which requires special considerations for entry

3.46
continuous flow valve
control valve which provides the wearer of a breathable gas-supplying **RPD** with **breathable gas** and allows the wearer to regulate a continuous air flow within prescribed limits

3.47
count median diameter
CMD
particle size of a particle distribution for which one-half the total number of particles are larger and one-half are smaller

3.48
dead space
space in which exhaled gas has not been purged and is subject to being rebreathed

3.49
demountable parts
parts of the device that are designed to be disconnected and reconnected by hand, without using tools

3.50
design duration
length of time specified by the manufacturer for a device in which the design conditions (e.g. flow rate) are met

3.51
dew point
temperature of air at a specified pressure when condensation of water will occur

3.52
doffing
process of removing or taking off the **RPD** effectively

3.53
donning
process of putting on the **RPD** effectively

3.54
drip
to run or fall in drops or blobs

3.55
dummy head
fixture simulating human heads, used in testing **RPD**.

3.56
durability
capability of the device to withstand all usage stress factors without degradation of performance or integrity

3.57
dust
aerosol consisting of mechanically produced solid particles derived from the breaking up of larger particles ranging from submicroscopic to macroscopic

NOTE See also **fume** and **smoke**.

3.58
emergency breathing component
component of the **RPD** that comes into operation when the normally operating mode of the device is not functioning

NOTE It provides an adequate level of protection for a period to enable the device wearer to exit the work area, unassisted, to a place of safety.

3.59
electromagnetic compatibility
EMC
ability of a device, unit of equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment

3.60
end of battery life
lowest capacity level of a battery which still allows a proper continuous function of the RPD

3.61
end of life cycle indicator
system that indicates the end of the overall life of an RPD

3.62
end-of-service-life indicator
ESLI
system that warns the wearer of a **gas filtering RPD** of the approach of the end of adequate respiratory protection

3.63
environment
potential hazardous area in which the **RPD** is to be used

3.64
ergonomic factors/parameters
all aspects of the RPD that are intended to maximize the wearer's ability to perform their tasks while minimizing wearer fatigue and discomfort

3.65
escape RPD
respiratory protective device to be used only when escaping (emergency egress) from a dangerous **environment**

3.66
exhalation valve
non-return valve which allows the release of exhaled and excess **breathable gas** from the **RPD**

3.67
explosive atmosphere
mixtures of substances with air, under atmospheric conditions, in the form of gases, vapours, mists or dusts in which, after ignition has occurred, combustion spreads to the entire unburned mixture

3.68
exposed parts
any part of the **RPD** which may come in contact with the ambient atmosphere during foreseeable conditions of use

3.69
eye irritation (external)
redness, itching or tearing of the eyes caused by gases, vapours, particles and liquids

3.70
eye irritation (internal)
redness, itching or tearing of the eyes caused by the **RPD** itself

3.71
fabric component
any single, or combination of, natural or synthetic material(s) that are pliable and that are made by weaving, felting, forming, or knitting

3.72
face seal leakage
leakage between the face and the **respiratory interface**

3.73
field of vision
area of sight while wearing an **RPD**

3.74
filter holder
component which is attached to either a respiratory interface or other part of the device and into which a filter, either encapsulated or unencapsulated, is inserted

3.75
filtering device
RPD in which air passes through filter(s) before being inhaled

NOTE The device can be unassisted, power assisted or powered.

3.76
fit test
use of a challenge agent and specific protocol to qualitatively or quantitatively determine an individual's ability to obtain an adequate seal with a specific make, model, and size of an **RPD**

3.77
flow rate
air supply
volume (mass) of **breathable gas** passing through the device in a given time

3.78
fogging
reduction of the field of vision and visual acuity caused by condensation of humidity inside the **visor**

3.79
fume
solid aerosols formed when the material from a volatilised solid condenses in air

3.80
gas
fluid that is in a gaseous state at **standard temperature and pressure** that expands to occupy the space or enclosure in which it is confined

3.81
gas filter
filter intended to remove specific gases and vapours from the atmosphere passing through it

3.82
gas filter capacity
volume or mass of a gaseous contaminant that a **gas filter** can adsorb, absorb or catalyze the breakdown of

3.83
gas filter change schedule
time interval after which a used **gas filter** is replaced with a new one

3.84
gas filtering RPD
device consisting of a **respiratory interface** with a filter which removes certain gases or vapours from the air to be inhaled by the **wearer** for a limited period

3.85
hazardous atmosphere
any atmosphere that is **oxygen-deficient**, exceeds an **occupational exposure limit**, presents a fire/explosion hazard, and/or contains an airborne toxic or disease-producing contaminant in concentrations deemed to be hazardous

3.86
hazard ratio
estimated/measured airborne concentration of a substance divided by the **occupational exposure limit**

NOTE This ratio is calculated for each gas, vapour, and/or particulate component, or for a mixture when the components have additive effects, that pose a respiratory hazard.

3.87
head harness
means of holding a **respiratory interface** in place on the head

3.88
heads up display
HUD
visual monitor or warning in the line of sight of the **RPD** wearer

3.89
high pressure
equal to or greater than 1 MPa (10 000 mbar) absolute pressure

3.90
hose
hollow flexible conduit to carry **breathable gas** designated as **low, medium** or **high pressure**

3.91
hydration facility
design feature of **RPD** to allow the **wearer** to drink without **doffing** of **RPD**

3.92
hydrostatic test
calibrated expansion pressure test of the structural integrity of cylinders

3.93
hypoxia
any condition in which there is an inadequate supply of oxygen in the tissues

3.94
immediately dangerous to life or health
IDLH
atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere

3.95
impact resistance
ability of RPD to withstand mechanical shock and dynamic stress from environment

3.96
inhalation valve
valve which opens during inhalation and closes during exhalation

3.97
inhaled air
air breathed in by the wearer

3.98
integral filter
filter which is not separable from the rest of the **respiratory interface**

3.99
interactive flow rate
actual **RPD** breathing gas flow per time as a result of the wearer's demand

3.100
intrinsic safety
various designations that ensure the RPD is not a source of ignition in explosive atmospheres

3.101
intrinsically safe (IS) RPD
respiratory protective device that has been certified as not providing a source of ignition in an explosive atmosphere

3.102
inward leakage
leakage of the ambient atmosphere into the **respiratory interface from** all sources excluding filter(s) where present, when measured in the laboratory in the specific test atmosphere

NOTE It is expressed as a ratio of contaminant concentration inside an **RPD** and ambient atmosphere, as follows:

$$\text{Inward leakage (\%)} = C_i/C_o \times 100$$

where

C_i is the concentration of challenge agent inside the respiratory interface;

C_o is the concentration of challenge agent outside inside the respiratory interface.

3.103
laboratory gas filter capacity
mass/volume of a specific test agent that will be removed or retained by certain mechanisms (e.g. physisorption, chemisorption, catalytical conversion, etc.) under specified conditions of temperature, relative humidity, challenge test gas concentration and the flow rate

NOTE The mass/volume is determined by measuring the breakthrough time at a defined breakthrough concentration.

3.104
leak-tightness
ability to withstand a loss of pressure inside an **RPD** over a given time as determined by a laboratory test

3.105
life cycle
time between date of manufacturing of the device to the date when device has to be withdrawn from service

3.106
liquefied-breathing gas
oxygen or air stored in liquid form and supplied to the wearer in a gaseous form

3.107
loose fitting respiratory interface
respiratory interface which does not rely on forming a complete seal to the wearer's skin

3.108
low boiling organic compound
organic compound having a boiling point $\leqslant$ 65 °C at atmospheric pressure

3.109
low pressure
pressure up to 100 hPa (mbar) above atmospheric pressure (gauge)

3.110
manufacturer's minimum design condition
lowest level of operating condition of the device as stated by the manufacturer at which the complete device will still meet the requirements for the designated class

3.111
manufacturer's minimum design flow rate
MMDF
minimum air flow rate, as stated by the manufacturer, at which the relevant requirements are met

3.112
marking
information included on the device to indicate specific **RPD** characteristics

3.113
mass median aerodynamic diameter
MMAD
point in an aerodynamic particle size distribution where half of the mass lies in particles with a diameter less than the MMAD and half in particles with diameters greater than the MMAD

3.114
material's compatibility with skin
characteristic of material resulting in insignificant irritation to the wearers' skin when in direct contact

3.115
maximum flow condition
those factors appropriate to the design specified by the manufacturer which give rise to the highest flow rate

3.116
maximum use concentration
MUC
maximum atmospheric concentration of a hazardous substance from which the **RPD** wearer can be expected to be protected when wearing an **RPD**, and is determined by the protection level of the **respiratory protective device** or class of respiratory protective devices and the **occupational exposure limit** of the hazardous substance

NOTE The maximum use concentration usually can be determined mathematically by multiplying the protection level specified for a respiratory protective device by the occupational exposure limit used for the hazardous substance.

3.117
mechanical shock
dynamic force on the device during a fall from a given height as determined by a laboratory test

3.118
mechanical strength of visor
ability of the device to withstand mechanical stress to the barrier in front of the eyes

3.119
medium pressure
pressure between 100 hPa (mbar) above atmospheric pressure to 1 MPa (10 000 mbar) pressure gauge

3.120
metabolic simulator
programmable automatic **breathing machine** that can simulate the characteristics of both human breathing (variable tidal volume and respiratory rate, humidity, temperature) and metabolic functions (variable oxygen consumption and carbon dioxide production)

3.121
minimum flow condition
those factors appropriate to the design specified by the manufacturer which give rise to the lowest flow rate

3.122
minimum required protection factor
MRPF
level of protection required, derived from the **adequacy assessment** procedure

3.123
minute ventilation
total volume of air exchanged in the lungs during one minute, V_E in l/min **BTPS**

3.124
minute volume
quantity of air exhaled in one minute

3.125
mist
liquid droplets generated by condensation of vapour back to the liquid state or by breaking up a liquid into a dispersed state

3.126
mode of operation
primary means of supplying the wearer with breathable gas, i.e., particle filtering, gas and vapour filtering, or breathable gas supplying

3.127
monitor
component of an **RPD** to enable the wearer to continuously assess that the manufacturer's minimum design air flow rate or manufacturer's minimum design conditions are met

3.128
multi-functional RPD
RPD which are capable of operating within its mode of operation by using different operating methods; e.g. power assist filtering devices, power on/off, compressed **breathable gas** system with compressed breathable gas device

3.129
multi-type combination filter
combination filter which meets the requirements of more than one type of gas and particle filter

3.130
multi-type gas filter
gas filter which meets the requirements of more than one type of gas filter

3.131
negative pressure
pressure inside the respiratory interface, hose, etc. that is lower than that of the ambient atmosphere

NOTE It is expressed in pascals (Pa).

3.132
nominal working duration
working time of a device, used for the classification determined in laboratory tests with a flow rate specified in an International Standard

3.133
occupational exposure limit
OEL
maximum concentration of airborne contaminants deemed to be acceptable, as defined by the authority having jurisdiction

3.134
operating pressure
pressure(s) developed within the **RPD** during service

3.135
oxygen compatibility
capability of **RPD** to allow direct contact with pressurised oxygen without risk of fire or explosion by being oil and grease free

3.136
oxygen consumption
amount of oxygen consumed by the human tissues for aerobic energy production, VO_2 in l/min **STPD**

3.137
oxygen deficient
condition based on an oxygen concentration or partial pressure below which a person may be adversely affected

NOTE Each authority having jurisdiction may establish an alternative definition or specific limit.

3.138
oxygen-enriched air
air containing oxygen at higher concentrations than that of atmospheric air at sea level

3.139
particle
generic term used to describe solid or liquid substances in the finely divided state and refers to particulate aerosols

EXAMPLE Dusts, mists, smoke, fumes, fibres, and fog as well as micro-organisms.

3.140
particle filter
filter which is intended to remove airborne particles

3.141
particle filter efficiency
degree to which a filter removes **aerosols** from the **ambient atmosphere**

3.142
particle filter respiratory protective device
particle filter RPD
device consisting of a **respiratory interface** with a **particle filter** that removes finely divided **particle**s from the air to be inhaled by the **wearer**

NOTE The filter medium may be replaceable or be an integral part of the construction.

3.143
peak inspiratory flow rate
highest instantaneous flow rate during the inhalation phase of a breath cycle in l/s **BTPS**

NOTE Litres per second (l/s) is the preferred unit as the flow takes place only during a short fraction of the breath cycle.

3.144
permeation
process by which a chemical moves through an **RPD** material on a molecular level (diffusion)

3.145
physical work capacity
ability of a person to engage in muscular work

3.146
positive pressure
pressure inside the **respiratory interface**, hose, etc. higher than that of the **ambient atmosphere**

3.147
practical performance
evaluation of **RPD** during simulation of typical work or escape activities in a laboratory

3.148
protection level
degree of respiratory protection allocated to an RPD for the purposes of selection and use that is expected to be provided to wearers when used within an effective RPD program as described in ISO 16975

3.149
pressure dew point
temperature at which moisture begins to condense from a gas under pressure, as the gas is cooled at this pressure

3.150
psychological impact on wearer
positive and negative influences on the wearer's state of mind by wearing the RPD or by its appearance and/or design

3.151
qualitative fit factor
QLFF
minimum assured (C_o/C_i)
qualitative estimate of the minimum fit of a particular **tight-fitting respiratory protective device** to a specific individual when a **qualitative fit test** is passed, i.e., the test agent is not detected by the subject's senses

3.152
qualitative fit test
QLFT
pass/fail test method that relies on the subject's sensory response to detect a challenge agent in order to assess the adequacy of **RPD** fit

3.153
quantitative fit factor
QNFF
QNFF = (C_o/C_i)
measure of the fit of a particular **tight-fitting** respiratory interface to a specific individual

NOTE It represents only **respiratory interface** to face leakage. Leakage from other sources (e g., air-purifying elements) must be essentially zero. The **QNFF** is measured with specialized instrumentation.

3.154
quantitative fit test
QNFT
test method that uses an instrument to assess (quantify) the amount of face seal leakage into the **respiratory protective device** in order to assess the adequacy of its fit

3.155
radionuclide
atom that spontaneously emits particles (e g., alpha or beta), gamma, or x-radiation

3.156
ready for use packaging
means to protect the functional components from environmental stress whilst the device is kept in a state that permits rapid donning by the wearer

3.157
reconstituted air
gaseous mixture prepared from pure liquid or gaseous oxygen and pure liquid or gaseous nitrogen, blended to meet appropriate national requirements

3.158
reliability
capability of a device to function without a failure in all specified conditions

3.159
required fit factor
RFF
numeric value established as a pass/fail point or acceptance criterion for quantitative fit testing

3.160
resistance to UV
ability of the material not to be affected by ultraviolet radiation

3.161
resistance to water spray/splash
capability of **RPD** to perform after exposure to water spray/splash

NOTE Submersion in water is excluded.

3.162
respiratory interface
part of a **respiratory protective device** that forms the protective barrier between the wearer's respiratory tract and the ambient atmosphere

NOTE The respiratory interface is connected to the filtering part of the device, or the part managing the supply of breathable gas.

3.163
respiratory protective device
RPD
personal protective equipment designed to protect the wearer's respiratory tract against inhalation of **hazardous atmospheres**

3.164
risk assessment
process of hazard, adequacy and suitability assessments relating to the selection of **RPD**

3.165
RPD incorporating other personal protective equipment (PPE) functions
capability of **RPD** to fulfil performances of other PPE stated in other relevant standards and protect against other hazards

3.166
RPD manufacturer
natural or legal person, who:

— designs and/or manufactures an **RPD,** or who has an **RPD** designed and/or manufactured with view to its placing on the market or for other use, under his/her own name or trademark;

— places an **RPD** on the market and/or puts it into service, under his/her own name or trademark

3.167
RPD programme
process of selecting, using and maintaining **RPD** to ensure adequate protection to the wearer

3.168
RPD programme administrator
individual designated to ensure the development, implementation and maintenance of the RPD programme

3.169
safety coupling/connector
breathable gas coupling/connector which requires at least two deliberate actions to separate the coupling or connector

3.170
second high pressure inlet connector
component for emergency purposes that receives **breathable gas** from an alternative **high pressure** breathable gas source whilst in use

3.171
second medium pressure inlet connector
component of **RPD** to receive **breathable gas** from an alternative **medium pressure** breathable gas source

3.172
second medium pressure outlet connector
component of **RPD** to supply **breathable gas** to a second person for the purpose of rescue

3.173
service life
period of time during which an **RPD** provides adequate protection to the wearer

3.174
service life of gas filter
time until **breakthrough** of contaminants during actual use

3.175
service time of components
time until **RPD** components lose performance

3.176
shelf life
length of time an **RPD** or RPD component may be stored without deteriorating prior to use when stored in accordance with manufacturer's instructions

3.177
sight defect correction
allowance within **RPD** for providing correction of wearer's sight

3.178
single-shift use
descriptor for identifying an **RPD** or RPD component that is not designed for reuse after one shift

3.179
smoke
aerosols generated by incomplete combustion.

3.180
standardized connector
device that allows an optional connection between a filter and a **respiratory interface** of unassisted filtering devices

3.181
standard atmospheric pressure
normal pressure of the lower atmosphere at sea level, usually defined as one atmosphere or 1 013,25 hPa (760 mm Hg)

3.182
STPD
standard temperature pressure dry
standard conditions for expression of oxygen consumption

NOTE Standard temperature (0 °C) and pressure (1013,25 hPa), dry air.

3.183
suitability assessment
selection method identifying **RPD** able to provide adequate protection during intended use taking into consideration the wearer, the task, and the workplace environment

3.184
supervisor
employer or a person assigned by the employer having responsibility for the **RPD wearer** and control over the workplace

3.185
supplied breathable gas-respiratory protective device
class of **respiratory protective device** that supplies the wearer with **breathable gas** from a source independent of the **ambient atmosphere** either individually carried or supplied by a stationary source

3.186
task
working activity to be undertaken by the **RPD wearer**

3.187
temperature of operation
environmental temperature during expected conditions of use

3.188
test subject
human being selected from a panel used for testing **RPD**

3.189
tight fitting respiratory interface
respiratory interface that forms a protective barrier between the wearer's respiratory tract and the **ambient atmosphere** by forming a seal to the wearer's skin

3.190
time-weighted average
TWA
average concentration of a contaminant in air during a specific time period

3.191
total inward leakage
TIL
leakage of the **ambient atmosphere** into the **respiratory interface** from all sources including filter(s), where present, or device, when measured in the laboratory in the specific test atmosphere

NOTE It is expressed as a ratio of contaminant concentration inside an **RPD** and **ambient atmosphere.**

Total inward leakage (%) = $C_i/C_o \times 100$

where

C_i is the concentration of challenge agent inside the respiratory interface;

C_o is the concentration of challenge agent outside the respiratory interface.

3.192
user
person or organization who makes use of **RPD**

EXAMPLE Those involved in selecting, maintaining, wearing, etc.

3.193
validated method
documented procedure that has been scientifically evaluated by qualified persons and determined to be appropriate and acceptable with regards to reproducibility, accuracy, precision, and other necessary parameters

3.194
vapour
gaseous phase of a substance which is liquid or solid at 20 °C and 100 kPa (1 000 mbar) (absolute)

3.195
visor
part of the respiratory interface through which the wearer sees and can, in addition, provide eye and face protection

3.196
visual clarity
measure of **visor(s)** to effect the sight within the field of vision of an **RPD**

3.197
visual inspection
process that assesses the device, marking and information supplied by the manufacturer, and any safety data sheets (if applicable) or declarations relevant to the materials used in its construction

3.198
voice amplifier
accessory or component of an **RPD** used to magnify the wearer's voice

3.199
warning device
component of **RPD** that informs the wearer to take some action

3.200
wearer
person who actually wears the **RPD**

3.201
wearer seal check
action conducted by the **RPD wearer** to determine if the RPD is properly sealed on the face

3.202
work of breathing
work done, measured in joule/litre of gas breathed, during one inhalation and one exhalation cycle whilst wearing the RPD at a given work rate

3.203
working pressure
settled pressure of a compressed gas at a reference temperature of 15 °C in a full cylinder

3.204
work rate
demand for **breathable gas** by the wearer per time due to work load

4 Graphical symbols for use on RPD

4.1 Introduction

Graphical symbols are described in ISO 7000. A graphical symbol is defined as a visually perceptible figure used to transmit information independently of language. It may be produced by drawing, printing or other means. The great majority of the graphical symbols in ISO 7000 were developed in accordance with the basic principles of ISO 3461-1, using arrows in accordance with ISO 4196.

NOTE ISO 3461-1 and ISO 4196 have been superseded by IEC 80416-1 and ISO 80416-2, respectively.

The meaning of each graphical symbol may depend upon its orientation in a given reference system and care should be taken to avoid ambiguity (e g. by rotating or mirroring).

Graphical symbols may be used, provided their meaning is clearly understood.

4.2 Examples of how graphical symbols may be used

4.2.1 See information supplied by the manufacturer

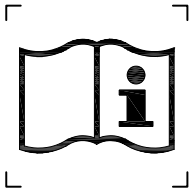
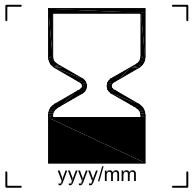


Figure 1 — See information supplied by the manufacturer

4.2.2 End of shelf life



Key

yyyy year

mm month

Figure 2 — End of shelf life

4.2.3 Temperature range of storage conditions

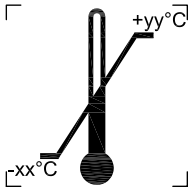


Figure 3 — Temperature range of storage conditions

4.2.4 Maximum humidity of storage conditions

Figure 4 — Maximum humidity of storage conditions

5 Units of measurement

5.1 Units

SI units will be used as the units of choice when reporting or making measurements with respect to respiratory protective devices. SI units are those units of measurement established by the International System of Units (Systeme International d'Units), with the international abbreviation SI, and was adopted by the 11th General Conference on Weights and Measures (Conference Generale des Poids et Mesures, CGPM) in 1960.

This system includes

— base units, and

— derived units including supplementary units,

which together form the coherent system of SI units.

Annex A
(informative)

Terms and definitions referring to respiratory protective devices in current national standards, regulations or other national contexts

These terms come from various standards and are used today to describe respirators or respiratory protective devices. Because these terms are interim terminology, no attempt has been made to standardize terminology such as respirator versus respiratory protective device. It is expected that, when the classification scheme is finalized by ISO TC94/SC15, this standard will be revised and the annex will be removed. The identifier after the colon in the title is an abbreviation used in the bibliography to identify the source of that term.

A.1
abrasive blasting respirator: ANSI Z88.2
respirator designed to protect the wearer from inhalation of, impact of, and abrasion by materials used or generated in abrasive blasting

A.2
air-compressor (2205): JIS T 8001
kind of air supply source for air-line respirators

A.3
air-control bag (2230): JIS T 8001
component used for a certain type of supplied-air respirator to fill up an air supply shortage caused by breathing

A.4
air-hose: AS/NZS 1715
tubing used to supply an air-hose respirator breathable air at or near atmospheric pressure

A.5
air-hose respirator: AS/NZS 1715
device used with a facepiece or head covering, through which clean air from a source remote from the workplace is made available to the wearer through an air-hose at near atmospheric pressure

A.6
airline respirator: ANSI Z88.2
atmosphere-supplying respirator in which the respirable gas is not designed to be carried by the wearer (formerly called *supplied air respirators*)

A.7
air-line: AS/NZS 1715
tubing used to deliver breathable air from a source of compressed air at a maximum pressure of 10 bar

A.8
air-line respirator: AS/NZS 1715
device through which air, is supplied to the wearer by means of an air-line at greater than atmospheric pressure from a source of compressed air capable of providing breathing air of the quality defined in this annex

A.9
air-line respirator: JIS T 8001
supplied-air respirator designed to supply the wearer with decompressed-air by a pressure reducing valve, etc. through a medium-pressure hose from a compressed-air line, air compressor or compressed-air cylinder

NOTE Three types of air-line respirators are available: continuous-flow type, demand type and pressure demand type.

A.10
air supply hose: EN 132
hose for supply of air at about atmospheric pressure

A.11
air-supply hose: JIS T 8001
generic term for inhalation tubes and medium-pressure hoses used for self-contained breathing apparatuses

A.12
air-supply valve: JIS T 8001
generic term for demand valves and pressure demand valves

A.13
assigned protection factor (APF): ANSI Z88.2
expected workplace level of respiratory protection that would be provided by a properly functioning respirator or a class of respirators to properly fitted and trained users

A.14
assigned protection factor (APF): ANSI Z88.10
minimum expected workplace level of respiratory protection that would be provided by a properly functioning respirator or a class of respirators to properly fitted and trained users

A.15
assigned protection factor (APF): OSHA 1910.134
workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program

A.16
assigned protection factor (APF): CSA Z94.4
anticipated level of respiratory protection that would be provided by a properly functioning respirator or class of respirators to properly fitted and trained users

A.17
assigned protection factor (APF): EN529
level of respiratory protection that can realistically be expected to be achieved in the workplace by 95 % of adequately trained and supervised wearers using a properly functioning and correctly fitted respiratory protective device

NOTE It is based on the 5th percentile of the Workplace Protection Factor (WPF) data.

A.18
assisted: EN 132
describes a filtering device or a fresh air hose breathing apparatus in which air is delivered to the facepiece by an assisting device

A.19
atmosphere immediately dangerous to life or health: EN529
atmosphere in which the concentrations of hazardous substances, including asphyxiants, or the oxygen levels present create one or more of the following conditions:

— immediate threat to life;

— could cause delayed threat to life;

— would cause immediate acute health effects;

— would prevent the respiratory protective device wearer from an unaided escape to safety in case of the device malfunctioning or failing to operate correctly

A.20
immediately dangerous to life or health: OSHA 1910.134
IDLH
atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere

A.21
atmosphere-supplying respirator: ANSI Z88.2
class of respirators that supply a respirable atmosphere, independent of the workplace atmosphere

A.22
atmosphere-supplying respirator: OSHA 1910.134
respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units

A.23
atmosphere-supplying respirator: NFPA 1981
respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere and includes self-contained breathing apparatus (SCBA) and supplied air respirators (SAR)

NOTE See also Combination SCBA/SAR, Self-Contained Breathing Apparatus, and Supplied Air Respirator.

A.24
atmosphere-supplying respirator: CSA Z94.4
respirator that supplies the respirator user with breathing air/gas from a source independent of the ambient atmosphere

A.25
atmosphere-supplying respirator: JIS T 8001
respiratory protective device designed for the wearer to breathe air, oxygen or breathable gas from a source independent of the ambient atmosphere

A.26
automatic relief valve: JIS T 8001
valve which opens automatically when the breathing gas pressure in a closed-circuit SCBA rises higher

A.27
auxiliary equipment: NIOSH 42 CFR 84
self-contained breathing apparatus, the use of which is limited in underground mine rescue and recovery operations to situations where the wearer has ready access to fresh air and at least one crew equipped with approved self-contained breathing apparatus of 2 h or longer rating, is in reserve at a fresh-air base

A.28
AX filter: EN 14387
for use against certain organic gases and vapours with a boiling point $\leqslant$ 65 °C as specified by the manufacturer

NOTE For single use only.

A.29
battery operated amplifier, speaker: JIS T 8001
device to magnify the wearer's voice with a full facepiece, etc utilizing electric energy, which is comprised of a microphone, amplifier and speaker

A.30
blouse: EN 132
garment, used as a facepiece, which covers the head and upper part of the body to the waist and wrists and to which air is supplied

A.31
breathable air: EN 132
air of a quality that makes it suitable for safe respiration

NOTE For compressed air for a breathing apparatus.

A.32
breathing air: AS/NZS 1715
respirable air above atmospheric pressure, meeting the requirements of Appendix A

A.33
breathing air cylinder: NFPA 1981
pressure vessel or vessels that are an integral part of the SCBA and that contain the breathing gas supply

NOTE This equipment can be configured as a single cylinder or other pressure vessel, or as multiple cylinders or pressure vessels.

A.34
breathing apparatus: EN132
RPD which enables the wearer to breathe independently of the ambient atmosphere

A.35
breathing apparatus for use in abrasive blasting operations: EN 132
breathing apparatus incorporating a protective hood or a blouse fitted with an impact resistant visor

NOTE Breathable air is supplied to the wearer from a source of air not carried by the wearer.

A.36
breathing gas: CSA Z94.4
oxygen, air, or other respirable gas as defined in the relevant Standards referenced in 9.1.3

A.37
breathing hose (low pressure): EN 132
flexible hose connected to the facepiece through which breathable gas enters at atmospheric pressure or at a pressure slightly above or below

A.38
breathing tube: AS/NZS 17-16
tubing connecting the respirator to a facepiece or head covering, supplying air at or near atmospheric pressure

A.39
breathing tube: JIS T 8001
NOTE flexible tube connecting a canister, flow control device, electric fan, air-supply valve, etc to the facepiece

NOTE In some cases they are named as follows:

— SCBA: inhalation tube;

— oxygen SCBA: inhalation tube and exhalation tube;

— PAPR: air-supply tube.

A.40
breathing zone: EN 529
space outside the facepiece extending 0,3m in radius in front of the respiratory protective device wearer's face and centered on the mid point of a line joining the ears

A.41
breath-responsive: EN 132
actively or passively responsive following the wearer's demand for air

A.42
canister/cartridge: ANSI Z88.2
container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container

A.43
canister or cartridge: OSHA
container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container

A.44
canister chemical cartridge: JIS T 8001
primary component of a gas respirator, which removes or detoxifies specific poisonous gases from the air passed through the container filled with chemicals such as sorbents, etc.

NOTE Chemical cartridges/canisters with combined filters are also available.

A.45
canister with filter, chemical cartridge with filter: JIS T 8001
chemical cartridge/canister which is incorporated with a particulate filter

NOTE The particulate filter is available in such configurations as built in or stack on a chemical cartridge/canister. Performance of the filter for particulate matter is classified into three classes by filtering efficiencies when tested with liquid particles or solid particles like those of particulate respirators.

A.46
chemical cartridge respirator: JIS T 8001
respirator composed of chemical cartridge(s), inhalation valve(s), a facepiece, exhalation valve(s) and head harness

NOTE Clean air filtered by the cartridges(s) is inhaled from the inhalation valve(s), and exhaled air is exhausted from the exhalation valve(s) to the outside atmosphere. It is used in the atmosphere where the concentration of the gases or vapours is less than 0,1 %, and is not used for emergency.

A.47
chemical cartridge respirator: JIS T 8001
gas respirator designed to connect a chemical cartridge(s) to the facepiece

A.48
chemical oxygen (KO_2) escape apparatus: EN 132
see **closed-circuit SCBA** (A.55)

A.49
chemical oxygen ($NaClO_3$) escape apparatus: EN 132
see **closed-circuit SCBA** (A.55)

A.50
chemical oxygen respirator: AS/NZS 1715
device which generates oxygen by means of a chemical reaction

A.51
chin-style gas mask: JIS T 8001
composed of canister(s), inhalation valve(s), a facepiece, exhalation valve(s) and head harness

NOTE Clean air filtered by the canister(s) is inhaled from the inhalation valve(s), and exhaled air is exhausted from the exhalation valve(s) to outside atmosphere, and is used in the atmosphere where the concentration of the gases or vapours is less than 1 % (1,5 % for ammonia).

A.52
chin-style gas mask: JIS T 8001
gas respirator designed to connect a medium size canister to the facepiece

A.53
chlorate candle: JIS T 8001
oxygen-generating canister using sodium chlorate as a primary chemical

A.54
cleaning: AS/NZS 1715
removal of airborne contaminant particles and the reduction in the number of microorganisms from the surface, by the process of washing in water and detergent without prior processing

A.55
closed-circuit SCBA: NFPA 1981[3)]
recirculation-type SCBA in which the exhaled gas is rebreathed by the wearer after the carbon dioxide has been removed from the exhalation gas and the oxygen content within the system has been restored from sources such as compressed breathing air, chemical oxygen, and liquid oxygen, or compressed gaseous oxygen

A.56
closed-circuit SCBA: JIS T 8001
closed-circuit oxygen SCBA
self-contained breathing apparatus designed to remove carbon dioxide from the wearer's exhaled air and add oxygen from its source for re-breathing

NOTE Both compressed oxygen type and oxygen-generating type are available. One is a device in which the inhaled air and exhaled air are separated, respectively. The other is a single path type.

A.57
container of CO_2 removing chemical: JIS T 8001
component of a closed-circuit SCBA, which is a container filled with the chemical to remove the carbon dioxide from the exhaled breath

A.58
closed-circuit oxygen self-rescuer: JIS T 8001
closed-circuit breathing device for escape

These devices are available in systems with the following functions: reducing the pressure of the compressed-oxygen for supply (type p), generating oxygen by the reaction of the chemical (sodium chlorate: type c) and generating oxygen by passing the exhaled air through the chemical to undergo the reaction with its moisture and the chemical (potassium super oxide: type k)

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A.59
combination filter respirator: AS/NZS 1715
device combining the filtration capabilities of gas and particulate filters

NOTE The filters may be a single unit or consist of separate filters in series to form one unit.

A.60
combination SCBA/SAR: NFPA 1981[3)]
atmosphere-supplying respirator that supplies a respirable atmosphere to the user from a combination of two breathing air sources that both are independent of the ambient environment

NOTE One of these sources consists of an open-circuit SCBA certified as compliant with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services*, and having a minimum rated service time of 30 min; and the other source has a connection for the attachment of an air line that would provide a continuous supply of breathing air independent of the SCBA breathing air supply (see also Atmosphere-Supplying Respirator, Self-Contained Breathing Apparatus, and Supplied Air Respirator).

A.61
combination air-line respirator with auxiliary self-contained air supply: JIS T 8001
device designed to be usually used as an airline respirator, and when used for escaping from danger it can be commuted to a compressed air open-circuit SCBA by switching to its small compressed-air cylinder

A.62
combination atmosphere-supplying and air-purifying respirator: JIS T 8001
respiratory protective device combining both atmosphere-supplying and air-purifying functions.

NOTE The following two types are available.

a) A device which primarily works as an atmosphere-supplying respirator; this can be also used as an air-purifying respirator in case the air supply fails.

b) A device which primarily works as an air-purifying respirator; this can be also used as an atmosphere-supplying respirator in case it has gone beyond the use limit of the air-purifying type.

This applies to the combination type respiratory protective devices in the old standard

A.63
combined filter: EN 132
filter intended to remove dispersed solid and/or liquid particles and specified gases and vapours from the flow of air passing through it

A.64
compressed air escape apparatus: EN 132
see **self-contained open-circuit compressed air breathing apparatus with full face mask or mouthpiece assembly for escape**

A.65
compressed-air escape apparatus: JIS T 8001
compressed air open-circuit SCBA for escape

A.66
compressed air escape apparatus with hood: EN 132
see **self-contained open-circuit compressed air breathing apparatus with hood for escape**

A.67
compressed air filter: EN 132
filter intended to remove dispersed solid and/or liquid particles and specified gases and vapours from compressed air passing through it

A.68
compressed air line breathing apparatus: EN 132
apparatus which is not self-contained and in which the facepiece is supplied with breathable air from a source of compressed air

A.69
compressed-air line: JIS T 8001
tubing laid at plants and mines, etc to deliver compressed-air

A.70
compressed air open-circuit SCBA: JIS T 8001
device which employs a compressed-air cylinder among the open-circuit SCBAs

NOTE Both demand type and pressure demand type are available. The maximum filling pressures in the compressed-air cylinders are 14,7 MPa and 29,4 MPa, respectively.

A.71
compressed air supply tube: EN 132
tube which delivers breathable air at a maximum pressure of 10 bar from a source of compressed air

A.72
compressed breathing air: NFPA 1981[3)]
oxygen or a respirable gas mixture stored in a compressed state and supplied to the user in gaseous form

A.73
compressed breathing air: CSA Z180.1
normal air that is processed by a compressed breathing air system and that meets the purity requirements of 15.3 and Table 1

NOTE Normal air and compressed breathing air produced from it may be expected to contain certain natural constituents in more or less constant concentration, as shown in Table 2. In reconstituted air the proportions of the minor constituents may be different from those shown in Table 2.

A.74
compressed-breathing gas: NIOSH 42 CFR 84
oxygen or air stored in a compressed state and supplied to the wearer in gaseous form

A.75
compressed-gas cylinder: JIS T 8001
vessel to store such gases as air and oxygen, etc by compression

A.76
compressed oxygen closed-circuit SCBA: JIS T 8001
self-contained breathing apparatus designed to remove carbon dioxide from the wearer's exhaled air through its container of CO_2 removing chemical and add oxygen from a compressed-oxygen cylinder for providing the wearer due to the closed-circuit system

NOTE Both constant/demand-joint type and demand type are available.

A.77
continuous flow respirator: ANSI Z88.2
atmosphere-supplying respirator that provides a continuous flow of respirable gas to the respiratory inlet covering

A.78
continuous-flow type air-line respirator: JIS T 8001
air-line respirator without an air-supply valve, intended to provide a continuous flow of air regulated by means of a flow control device

A.79
control equipment: CSA Z180.1
assembly of mechanical or electrical components, such as regulators, valves, alarms, recorders, switches, etc, used to operate the compressed breathing air system to ensure the production and delivery of compressed breathing air in the quality and quantity required

A.80
controlled breathing: CSA Z94.4
method of consciously reducing air used by forcing exhalation from the mouth and allowing natural inhalation through the nose

A.81
cylinder: CSA Z94.4
pressure vessel as defined in CSA Standards CAN/CSA-B339 and CAN/CSA-B340 forming an integral part of the accepted respirator

A.82
cylinder valve: JIS T 8001
opening-shutting valve attached to a compressed-gas cylinder used for self-contained breathing apparatuses, etc.

A.83
demand respirator: ANSI Z88.2
atmosphere-supplying respirator that admits respirable gas to the facepiece only when a negative pressure is created inside the facepiece by inhalation

A.84
demand type air-line respirator: JIS T 8001
air-line respirator intended to provide the air required for breathing by means of a demand valve

A.85
demand type with positive pressure: EN 132
type of RPD which is fitted with a demand valve, governed by breathing action of the lungs, that actuates at a positive pressure in the facepiece under conditions defined in relevant European standards

A.86
demand type without positive pressure: EN 132
RPD which is fitted with a demand valve, governed by breathing action of the lungs, that actuates at a negative pressure during inhalation in the facepiece

A.87
demand valve: EN 132
valve, governed by the breathing action of lungs, supplying the breathable gas on demand

A.88
directly connected particulate respirator: JIS T 8001
respirator composed of filter cartridge(s), inhalation valve(s), a facepiece, exhalation valve(s) and head harness

NOTE Clean air filtered by the filter cartridge is inhaled from the inhalation valve, and exhaled air is exhausted from the exhalation valve(s) to outside atmosphere.

A.89
direct connection type particulate respirator: JIS T 8001
replaceable type particulate respirator with a filter(s) which is directly connected to the facepiece in structure

A.90
disinfection: AS/NZS 1715
reduction of non-sporing organisms by chemical means

A.91
disposable respirator: ANSI Z88.2
respirator for which maintenance is not intended and that is designed to be discarded after excessive resistance, sorbent exhaustion, physical damage, or end-of-service-life renders it unsuitable for use

EXAMPLE A disposable half-mask respirator or a disposable escape-only self-contained breathing apparatus (SCBA)

A.92
disposable respirator: AS/NZS 1715
device for which maintenance is not intended and which is designed to be discarded after excessive resistance, sorbent exhaustion, physical damage or end of service-life renders it unsuitable for use

A.93
disposable respirator: JIS T 8001
respiratory protective device so designed as to be maintenance-free and disposed after it is of no use due to an increase in flow resistance, exhaustion of filtering ability, damage of component parts or expiration of service life

EXAMPLE Disposable respirators and escape masks.

A.94
disposable type particulate respirator: JIS T 8001
respirator composed of a filter united with a facepiece and head harness

NOTE Clean air filtered by the filtering facepiece is inhaled, and the exhaled air is exhausted through the filtering facepiece or through both of an exhalation valve and the filtering facepiece if the filtering facepiece involves an exhalation valve.

A.95
downstream valve: EN 132
valve which opens with the pressure of the air and is normally kept shut by means of a spring

A.96
drain trap: JIS T 8001
trap to store condensed water in a closed-circuit SCBA

A.97
dust filtering layer: JIS T 8001
filter for particulate matter built in a chemical cartridge/canister in order to filtrate fine powders of the sorbent

A.98
emergency breathing facility
component of the **RPD** that comes into operation when the normally operating mode of the device is not functioning

NOTE It provides an adequate level of protection for a period to enable the device wearer to exit the hazardous area, unassisted, to a place of safety.

A.99
emergency escape breathing device for shipboard use: JIS T 8001
self-contained breathing apparatus to be installed in a ship-engine room, etc preparing for escape in an emergency, a service life of which is more than 10 min

EXAMPLE These devices are of the continuous-flow, open-circuit and closed-circuit type.

A.100
emergency supply-air warning device: JIS T 8001
device to send compressed-air to the wearer by automatically switching the air supply source over to a compressed-air cylinder, etc, and to give an alarm for an emergency occurrence to the wearer and workers around him

NOTE This alarm is activated when the supply from the air compressor or compressed-air line stops or decreases for some reason or other while using a supplied-air respirator.

A.101
end-of-service-time indicator: NFPA 1981[3)] **EOSTI**
warning device on an SCBA that warns the user that the end of the service time of the SCBA is approaching

A.102
escape mask: JIS T 8001
respiratory protective device to be used when escaping from dangerous places, e.g. fire, explosion and hazardous gases, etc, which is divided broadly into air-purifying and self-contained types

A.103
escape-only respirator: ANSI Z88.2
respirator intended only for use during emergency egress from a hazardous atmosphere

A.104
escape type respirator: AS/NZS 1716
device for emergency escape from a respiratory hazard, e.g. fire

A.105
escape-type respiratory protective device: EN 132
RPD designed to be used only during escape from hazardous atmospheres

A.106
exhalation resistance: JIS T 8001
air-flow resistance in inhalation when a respiratory protective device is worn

NOTE As a general rule, it is expressed by the air-flow resistance at a constant flow rate when the air is passed through a respiratory protective device in the same direction as the exhaled air flows.

A.107
extended usage: AS/NZS 1716
time between the rated duration and exhaustion of the chemical or collapse of the breathing bag when the apparatus is subjected to a breathing simulator test at a breathing rate of 35 litres per minute

A.108
eyepiece: JIS T 8001
component of facepieces, etc, a transparent part which secures the wearer's field of vision and prevents passage of hazardous substances.

EXAMPLE This component is available as flat plate, curved and three-dimensionally formed types

A.109
face blank
main body of a **tight fitting respiratory interface** to which the functional components are attached

A.110
facepiece: NFPA 1981[3)]
component of an SCBA that covers the wearer's nose, mouth, and eyes

A.111
facepiece: EN 132
part of an RPD which connects the wearer's respiratory tract to the other parts of the device and isolates the respiratory tract from ambient atmosphere

EXAMPLE Facepieces may be full face masks, half masks, quarter masks, mouthpiece assemblies, filtering facepieces. Helmets, hoods, blouses and suits may serve the same purpose

A.112
facepiece: JIS T 8001
component of a respiratory protective device which covers the wearer's face inclusive of his respiratory system, securing airtight, and as its components breathing tube (for facepiece of front- or back-mounted type only), inhalation valve (not included, as the case may be), nose-cup (for full facepiece only), eyepiece (for full facepiece only) and exhalation valve are incorporated

NOTE In some cases, a speaking diaphragm and a whistle, etc. are included as further additional functions. In addition, as for the facepiece of a particulate respirator and a gas respirator, an inhalation valve(s), exhalation valve(s), head harness and breathing tube (for front-or back-mounted type only) are not included.

A.113
facepiece incorporating head protection: EN 132
facepiece incorporating head protection comprises a facepiece either attached to or integrated with a safety helmet

A.114
facepiece or mouthpiece: NIOSH 42 CFR 84
respirator component designed to provide a gas-tight or dust-tight fit with the face and may include headbands, valves, and connections for canisters, cartridges, filters, or respirable gas source

A.115
facial fit check: AS/NZS 1715
simple check to ensure the respirator fits each time it is worn

A.116
facial fit test: AS/NZS 1715
validated method of matching a respirator to an individual

A.117
face seal: JIS T 8001
part of the facepiece blank which fits over the wearer's face

A.118
faceshield: JIS T 8001
kind of facepiece, etc, which takes the loose-fitting shape to cover the entire face

A.119
fibrous dust: JIS T 8001
dusts looking like fibers such as asbestos, cotton, synthetic fiber and fiberglass, etc.

A.120
filter: ANSI Z88.2
component used in respirators to remove solid or liquid aerosols from the inspired air

A.121
filter: EN 132
device intended to remove specific contaminants from the ambient air passing through it

A.122
filter: JIS T 8001
component intended to collect or detoxify harmful materials (particulates or gases) contained in the inhaled or supplied air

NOTE This component is often referred to as the one which collects particulate matters

A.123
filter: OSHA 1910.134
air purifying element
component used in respirators to remove solid or liquid aerosols from the inspired air

A.124
filter housing: EN 132
component which is attached to either a facepiece or other part of the device and into which a filter, either encapsulated or unencapsulated, is inserted

A.125
filtering device with hood for self-rescue from fire: EN 132
filtering smoke hood
see **smoke hood**

A.126
filtering facepiece: EN 132
see **filtering half mask**

A.127
filtering facepiece (dust mask): OSHA 1910.134
negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire face-piece composed of the filtering medium

A.128
filtering half mask: EN 132
RPD entirely or substantially constructed of filtering material

NOTE It is marked FF as for filtering facepiece.

A.129
filter self rescuer: EN 132
RPD exclusively intended for escape, incorporating a filter against carbon monoxide through which the ambient air is drawn to a facepiece

A.130
filtration type escape respirator: AS/NZS 1715
device incorporating filters which removes certain particulates and gases or vapours from the air inhaled by the wearer for a limited time during escape from a respiratory hazard

A.131
fit check: ANSI Z88.2
test conducted by the wearer to determine if the respirator is properly seated to the face

A.132
fit check: JIS T 8001
qualitative testing conducted by the wearer to confirm that the fitness is in good condition when wearing a respiratory protective device

A.133
fitness: JIS T 8001
degree of airtight contact of a facepiece over the wearer's face

A.134
flow control device: JIS T 8001
device used with a supplied-air respirator, by which the wearer can control a flow rate

A.135
fresh air hose breathing apparatus: EN 132
RPD in which breathable air is obtained through an air supply hose either assisted or unassisted

A.136
front- or back-mounted gas mask: JIS T 8001
gas respirator with a breathing tube designed to connect a large size canister to the facepiece

A.137
front- or back-mounted particulate respirator: JIS T 8001
particulate respirator with a breathing tube in structure which connects the facepiece to a container holding a filter

A.138
full face mask: EN 132
tight fitting facepiece covering mouth, nose, eyes and chin

A.139
full facepiece: AS/NZS 1715
close fitting device to cover the eyes, nose and mouth and be secured in position by suitable means

A.140
full facepiece: JIS T 8001
facepiece covering the eyes, nose and the peripheral of the mouth

NOTE The one with a single eyepiece is called a single-eyepiece type, and the other with a pair of eyepieces is called a twin-eyepiece type.

A.141
gas filter respirator: AS/NZS 1716
device consisting of a half facepiece, full facepiece, head covering or mouthpiece with a filter which removes certain gases or vapours from the air to be inhaled by the wearer for a limited period

NOTE This type of respirator may also incorporate a filter to remove particulates.

A.142
gas respirator: JIS T 8001
respiratory protective device to remove toxic gases, etc in the ambient atmosphere inhaled by the wearer's breathing action of the lungs through a chemical cartridge(s)/canister

NOTE Three types are available; chemical cartridge, chin- style and front-or back-mounted types.

A.143
half facepiece: AS/NZS 1715
close fitting device to cover the nose, mouth and chin and be secured in position by suitable means

A144
half mask: EN 132
tight fitting facepiece covering mouth, nose and chin

A.145
half mask without inhalation valves: EN 132
filtering device with a half mask and without inhalation valves, which may or may not have exhalation valves

NOTE It comprises a half mask and separable and replaceable filters.

A.146
harness: JIS T 8001
apparatus for wearing a respiratory protective device

NOTE Generic term for shouldering gear, waist belt and shoulder belt, etc.

A.147
hazardous material, HAZMAT, hazardous substance: JIS T 8001
substances which are hazardous to life and health

NOTE These substances are classified as follows:

a) Poisonous and deleterious substances hazardous in a small quantity.

b) Suffocating gases hazardous in a large quantity if exist (nitrogen, methane and carbon dioxide, etc), and dusts, vapours and gases, etc which are low-toxic, however cause disorder due to an extended period of exposure.

A.148
head and face covering: AS/NZS 1715
hood, faceshield, visor or helmet covering all or part of the head and extending where appropriate to the shoulders or waist

NOTE This type of protection may include sleeves and is secured in position by suitable means.

A.149
head net: EN 132
head harness in the form of a net (mesh fabric)

A.150
heavy duty construction: EN 132
term that denotes mechanical properties of a RPD. Designed to be used in work situations with need for mechanically robust device

See also: **light duty construction.**

A.151
helmet: ANSI Z88.2
hood that offers head protection against impact and penetration

A.152
helmet: OSHA 1910.134
rigid respiratory inlet covering that also provides head protection against impact and penetration

A.153
helmet: EN 132
part of a RPD used as a facepiece offering head protection

A.154
helmet/hood: CSA Z94.4
portion of a respirator which completely covers the head and neck, may cover portions of the shoulders, and may offer head and/or eye protection

A.155
high efficiency particulate air filter: OSHA 1910.134
HEPA
filter that is at least 99,97% efficient in removing monodisperse particles of 0,3 µm in diameter

NOTE The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

A.156
high-efficiency particulate filter (He): CSA Z94.4
filter that has been tested to ensure an efficiency equal to or exceeding 99.97 % for removal of particles having a mean aerodynamic diameter of 0.3 µm from the air

NOTE This Includes NIOSH classifications N-100, R-100, P-100, and He, formerly referred to as HEPA.

A.157
highest hazard ratio (HHR): CSA Z94.4
highest calculated hazard ratio (HR) for any gas, vapour, and/or particulate component that poses a respiratory hazard

A.158
hood: ANSI Z88.2
respiratory inlet covering that completely covers the head and neck and may cover portions of the shoulders

A.159
hood: EN 132
loose-fitting facepiece, which covers at least the face, and may cover the entire head

A.160
hood: JIS T 8001
kind of facepiece, etc, which takes the loose-fitting shape to cover at least the head and neck

A.161
hood: OSHA 1910.134
respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso

A.162
medium-pressure hose: JIS T 800
pressure-resistant hose to deliver air or oxygen at pressures of 98~980kPa

A.163
hose-mask respirator: AS/NZS 1715
respirator, used with a full facepiece through which respirable air is available to the wearer through an air hose at atmospheric or near atmospheric pressure

A.164
hose mask: JIS T 8001
kind of supplied-air respirator, which is designed to supply the wearer with breathable air through a hose from a source other than the workplace environment

NOTE Two types are available in this type, i.e., the wearer inhales air through the device with his own lungs or a blower delivers air through the device to the wearer (electrically- or hand-operated).

A.165
hose mask without blower: JIS T 8001
hose mask with its one opening of the hose fixed at a place outside the workplace environment

NOTE The wearer inspires breathable air independent of the workplace environment by his own lungs through a hose, breathing tube and facepiece, etc.

A.166
hose mask with blower: JIS T 8001
hose mask designed to supply the wearer with breathable air independent of the workplace environment by means of a blower from a place outside the workplace

NOTE Electrically- and hand-operated types are available.

A.167
initial oxygen supplying device: JIS T 8001
device which supplies within a short time necessary amounts of oxygen in one respiration, which is initiated in early stage of operating an oxygen-generating type closed-circuit SCBA and a self-rescuer

NOTE Devices exist for which the oxygen is generated by chemical reactions of chemicals and for which the oxygen is supplied by reducing the pressure of the compressed oxygen.

A.168
inhalation resistance, inhalation breathing resistance: JIS T 8001
air-flow resistance in inhalation when a respiratory protective device is worn

NOTE As a general rule, it is indicated by the air-flow resistance at a constant flow rate by passing the air through a respiratory protective device in the same direction as the inhaled air flows.

A.169
inhalation valve: JIS T 8001
valve which opens during inhalation and closes during exhalation

A.170
interactive flow: EN 132
flow resulting from the combined action of a power-assisted device and a tidal breathing pattern at the facepiece

A.171
leak gas concentration curve: JIS T 8001
graph showing time-varying effluent gas concentrations when a constant concentration of toxic gas is passed continuously through a gas respirator's chemical cartridge/canister

A.172
light duty construction: EN 132
term that denotes mechanical properties of a RPD designed to be used in work situations with little risk of mechanical damage

See also: **heavy duty construction.**

A.173
loose-fitting facepiece: ANSI Z88.2
respiratory inlet covering that is designed to form a partial seal with the face, does not cover the neck and shoulders

NOTE It may or may not offer head protection against impact and penetration.

A.174
loose-fitting facepiece/visor
LFFV: CSA Z94.4
portion of a respirator that forms a partial seal with the face, does not cover the neck and shoulders

NOTE It may or may not offer head and/or eye protection.

A.175
loose fitting type respirator: JIS T 8001
respiratory protective device designed not to tightly fit a covering (hood and face shield) over the wearer's face, etc.

NOTE When using this type of respirator, large amounts of air supply are needed to prevent hazardous contaminants from leaking through openings into the covering on the face.

A.176
lung governed demand valve: EN 132
valve for breathing apparatus by which an air supply is regulated in accordance with the wearer's breathing

A.177
manual relief valve: JIS T 8001
valve which can be opened by hand when the breathing gas pressure in a closed-circuit SCBA rises so high as to oppress the wearer's breath

A.178
mass median diameter: JIS T 8001
MMD
median diameter in the mass distribution of particulate matter

NOTE The particle mass smaller than the MMD and the one larger than the CMD account for one-half of the total mass, respectively.

A.179
maximum allowable penetration: JIS T 8001
maximum concentration which is evaluated that a test gas concentration passed through a chemical cartridge/canister has not yet reached a breakthrough when the air containing the test gas is passed through it

A.180
maximum filling pressure: JIS T 8001
maximum allowable gas pressure to fill up a compressed-gas cylinder at a temperature of 35 °C

A.181
medium pressure connecting tube: EN 132
tube connecting the demand valve or the control valve with the air supply system at medium pressure

A.182
mounting flanges: EN 132
device to fix tightly together a full face mask and a helmet

A.183
mouthpiece: AS/NZS 1715
device, designed to be held in the mouth, through which all breathing air passes

NOTE This element is normally used in conjunction with a nose clip.

A.184
mouthpiece: CSA Z94.4
portion of a respirator that is held and sealed in the user's mouth and is designed to be used in conjunction with a nose clamp

A.185
mouthpiece: JIS T 8001
kind of facepiece, etc coming in such a tight-fitting configuration as inserting the brim between the lips and the gums held by the teeth for breathing through the mouth.

A.186
mouthpiece assembly: EN 132
facepiece held by the teeth or by teeth and head harness, sealing against the lips and through which air is inhaled and exhaled while the nose is closed by a clip

A.187
mouthpiece and nose-clamp assembly: ANSI Z88.2
respiratory inlet covering that is held in the wearer's mouth and must always be used in conjunction with a nose clamp

A.188
mouthpiece type gas respirator: JIS T 8001
gas respirator designed to connect a chemical cartridge and a nose clamp to the mouthpiece for breathing only by the mouth

A.189
negative-pressure respirator: ANSI Z88.2
respirator in which the air pressure inside the respiratory inlet covering is negative during inhalation with respect to the ambient air pressure

A.190
negative pressure respirator (tight fitting): OSHA 1910.134
respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator

A.191
negative/positive-pressure respirator: JIS T 8001
respiratory protective device in which the pressure inside the facepiece, etc. is positive during inhalation when the volume of inhalation is less than that of air supply

NOTE The pressure becomes negative when the volume of inhalation is more than that of the air supply

A.192
negative-pressure respirator: JIS T 8001
respiratory protective device in which the pressure inside the facepiece or mouthpiece is negative during the phase of inhalation

A.193
negative pressure SCBA: NFPA 1981[3)]
SCBA in which the pressure inside the facepiece, in relation to the pressure surrounding the outside of the facepiece, is negative during any part of the inhalation or exhalation cycle

A.194
nominal protection factor: EN529
number derived from the maximum percentage of total inward leakage permitted in relevant European Standards for a given class of respiratory protective device.

NOTE The relationship between nominal protection factor and total inward leakage can be expressed as follows:

$$\text{Nominal protection factor} = \frac{100}{\text{permitted maximum total inward leakage, in percent}}$$

A.195
nominal service life: JIS T 8001
usable time of a respiratory protective device or its component stated by the manufacturer

A.196
non-powered air purifying respirator: JIS T 8001
air-purifying respirator without an electrically-operated fan

NOTE Generic term for the particulate respirators and gas respirators.

A.197
nose-cup: JIS T 8001
covering which rests on the nose and the peripheral of the mouth to prevent the exhaled air from diffusing into the facepiece

A.198
nose-clamp: JIS T 8001
device to be used in conjunction with a mouthpiece, which occludes the nostrils to prevent air inhalation

A.199
NTP: AS/NZS 1716
normal temperature and pressure i.e. 23°C and 101.3 kPa respectively

A.200
normal air: CSA Z180.1
good-quality outdoor air of the lower atmosphere with a typical or average composition as shown in Table 2

NOTE The values shown may vary from one published reference to another.

A.201
nose clip: AS/NZS 1715
device designed to occlude the nostrils to prevent air inhalation.

NOTE It is normally used in conjunction with a mouthpiece.

A.202
not immediately dangerous to life or health: NIOSH 42 CFR 84
any hazardous atmosphere which may produce physical discomfort immediately, chronic poisoning after repeated exposure, or acute adverse physiological symptoms after prolonged exposure

A.203
open-circuit SCBA: JIS T 8001
self-contained breathing apparatus designed to supply the wearer with air, oxygen or breathable gas from a compressed-gas cylinder through an air-supply valve, etc, and to exhaust the exhaled air from an exhalation valve(s) to the ambient atmosphere

NOTE At present oxygen types are out of production.

A.204
open-circuit SCBA: NFPA 1981[3)]
SCBA in which exhalation is vented to the atmosphere and not rebreathed

NOTE There are two types of open-circuit SCBA: negative pressure or demand type, and positive pressure or pressure demand type.

A.205
overflow valve: EN 132
non-return valve, fitted to the breathing hose, that is specially designed to allow the excess air supply to escape to the atmosphere

A.206
oxygen deficiency: CSA Z94.4
condition based on an oxygen concentration or partial pressure below which a person may be adversely affected

NOTE Each authority having jurisdiction may establish an alternative definition.

A.207
oxygen deficiency: JIS T 8001
oxygen deficient atmosphere
oxygen lack
state where the oxygen concentration in the ambient atmosphere has noticeably dropped below a normal value

NOTE According to the Mine Safety Law, it refers to under 19 %, and the Industrial Safety and Health Law, under 18 %.

A.208
oxygen deficient air: EN 132
ambient air containing oxygen less than 17 % by volume (dry air) where filtering device can not be used

A.209
oxygen-deficient atmosphere: AS/NZS 1715
atmosphere which does not contain enough oxygen to fully support the body's metabolic processes

NOTE It is generally acknowledged that an atmospheric concentration below 18 % by volume is deficient in oxygen.

A.210
oxygen-deficient atmosphere: NIOSH 42 CFR 84
atmosphere which contains an oxygen partial pressure of less than 148 mmHg (19,5 % by volume at sea level)

A.211
oxygen-generating canister: JIS T 8001
canister filled with oxygen-generating chemicals

NOTE Oxygen-generating canisters such as sodium chlorate (chlorate candle) type and potassium superoxide (KO_2) type are available.

A.212
oxygen-generating KO2 canister: JIS T 8001
oxygen-generating canister designed to release oxygen by reacting the potassium super oxide with the moisture in the exhaled breath

A.213
oxygen generating capacity: JIS T 8001
capacity of an oxygen generating canister to generate oxygen

A.214
oxygen-generating closed-circuit SCBA: JIS T 8001
system which supplies or adds oxygen by means of an oxygen-generating canister among the closed-circuit SCBAs

NOTE Oxygen-generating systems operate, for example, by the reaction of the chemical (sodium chlorate: type c) and by passing the exhaled air through the chemical to undergo the reaction with its moisture and the chemical (potassium super oxide: type k).

A.215
particulate: CSA Z94.4
airborne contaminants other than gas and vapour, but including dusts, fumes, mists, fibres, fog, pollen, smoke, and spores

A.216
particulate filter: AS/NZS 1715
filter designed to remove solid or liquid aerosols or both from the inhaled air

A.217
particulate filter: JIS T 8001
primary component of a particulate respirator, which collects particulate matter in the ambient air

A.218
particulate filter respirator: AS/NZS 1716
device consisting of a half facepiece, full facepiece or head covering with particulate filter that removes finely divided solids or liquid matter from the air to be inhaled by the wearer

NOTE The filter medium may be replaceable or be an integral part of the construction.

A.219
particulate respirator: JIS T 8001
respiratory protective device to remove by its filter such particulates as dusts, fumes and mists, etc from the ambient atmosphere to be inhaled by the wearer's breathing action of the lungs

NOTE It is available in replaceable and disposable types. When tested against liquid particles or solid particles, it is classified into three classes according to its efficiency, respectively (collecting efficiency: more than 80 %, more than 95 % and more than 99,9 %). The replaceable type is divided into the direct connection type and the front- or back-mounted type

A.220
peak inhalation rate: EN529
maximum instantaneous volume flow rate which occurs during an inhalation cycle of a respiratory protective device wearer

A.221
pendulum-type respiratory protective device: EN 132
RPD in which the wearer alternatively inhales and exhales by the same route

A.222
positive-pressure exhalation valve: JIS T 8001
valve designed to open when the pressure inside the facepiece reaches the fixed value

NOTE It is primarily used for pressure demand type respiratory protective devices.

A.223
positive-pressure respirator: ANSI Z88.2
respirator in which the pressure inside the respiratory inlet covering is normally positive with respect to ambient air pressure

A.224
positive-pressure respirator: JIS T 8001
respiratory protective device so designed as to maintain the pressure inside the facepiece, etc positive during the phase of inhalation

A.225
positive pressure SCBA: NFPA 1981[3)]
SCBA in which the pressure inside the facepiece, in relation to the pressure surrounding the outside of the facepiece, is positive during both inhalation and exhalation

A.226
power assisted filtering device: EN 132
filtering device in which air is delivered to full face mask, half mask or quarter mask by means of blower worn by the wearer

NOTE In the classification, the letters TM are derived from the words "Turbo" and "Mask".

A.227
powered air-purifying respirator: ANSI Z88.2
air-purifying respirator that uses a blower to force the ambient atmosphere through air-purifying elements to the inlet covering

A.228
powered air-purifying respirator: AS/NZS 1715
device incorporating a half facepiece, full facepiece or head covering which provides the wearer with air filtered through a powered filtering unit, comprising one or more filters, and an electrically operated blower unit

NOTE This respirator is referred to as PAPR.

A.229
powered air-purifying respirator: JIS T 8001 PAPR
respiratory protective device consisting of an electrically-powered fan, filter and facepiece, etc, which supplies the wearer with air by removing hazardous substances

NOTE 1 A standard type PAPR designed to maintain positive pressure inside the facepiece, etc secures a higher protective performance.

NOTE 2 A breath-assistant type PAPR is inferior to the standard type in its protective performance due to less air volume supplied by an electrically-powered fan, however its protective performance is higher than that of a dust respirator or a gas respirator, being easier in breathing as well.

A.230
powered filtering device: EN 132
filtering device in which air is delivered to a hood or a helmet by means of a blower worn by the wearer

NOTE In the classification, the letters TH are derived from the words “Turbo” and “Hood”.

A.231
powered fresh air hose breathing apparatus incorporating a hood: EN 132
apparatus which is not self-contained and in which breathable fresh air is blown from an air source by means of a powered air supply

A.232
prefilter: EN 132
filter intended to remove coarse particles before they enter the filter

A.233
pressure-demand respirator: ANSI Z88.2
positive pressure atmosphere-supplying respirator that admits respirable gas to the facepiece when the positive pressure is reduced inside the facepiece by inhalation

A.234
pressure-demand respirator: CSA Z94.4
respirator where the pressure in the facepiece or hood remains positive with respect to the ambient pressure during both inhalation and exhalation

A.235
pressure demand type air-line respirator: JIS T 8001
air-line respirator intended to provide the air required for breathing and maintaining positive pressure in the facepiece by means of a pressure demand valve

A.236
pressure demand valve: JIS T 8001
valve which operates to hold the pressure inside the facepiece at the fixed positive level.

NOTE Such air-line respirators and self-contained breathing apparatuses with this valve are called demand type.

A.237
pressure dew point: CSA Z180.1
temperature at which moisture begins to condense from a gas under pressure, as the gas is cooled at this pressure

A.238
pressure reducing valve: JIS T 8001
valve which maintains the outlet pressure constant by reducing the gas pressure supplied from a compressed-gas cylinder

A.239
program protection factor: AIHA
PPF
estimate of the respiratory protection provided to a worker in the context of a specific respirator program

NOTE 1 This factor is defined as the contaminant concentration that the user would inhale if the respirator were not worn (Co) divided by the contaminant concentration inside the respirator as it is actually used (Ci). (PPF = Co/C).

NOTE 2 Concentration Ci may be estimated from biological monitoring as the airborne concentration expected to produce the measured biological index.

NOTE 3 PPF is an estimate of the effectiveness of the complete respirator program rather than the performance capabilities of the respirator itself. It is affected by such factors as the following:

— wearer’s activities;

— user training and motivation;

— proper selection, maintenance, and storage;

— user training and fit testing;

— facial hair or other conditions that interfere with proper fit; and

— supervision, administration, and monitoring of the program.

If any of these or other program elements are deficient, the program protection factor will be adversely affected.

A.240
protection factor: AS/NZS 1715
measure of the degree of protection afforded by the respirator, defined as the ratio of the concentration of contaminant outside the respirator to that inside the respirator

A.241
protection factor: JIS T 8001
PF
factor to express the protection efficiency of a respiratory protective device

NOTE This factor is expressed by the following equation:

$$\mathrm{PF} = \frac{100(\%)}{L}$$

where

PF is the protection factor;

L is the total inward leakage, in percent.

A.242
protection rate: JIS T 8001
rate to express to what extent it is capable of protecting the harmful materials and ambient air from leaking into the inhaled breath during a respiratory protective device is worn

NOTE This rate is expressed by the following equations:

a) in the case of supplied-air type:

$$\mathrm{PE} = \frac{V - V_o}{V} \times 100$$

where

PE is the protection rate, in percent;

V is the quantity of the wearer's inhaled breath;

V_0 is the quantity of the ambient air leaked into the wearer's inhaled breath.

or

$$\mathrm{PE} = 100 - M$$

where

PE is the protection rate, in percent;

M *is the* mixed ambient air rate(%) existing in the wearer's inhaled breath.

b) in the case of air-purifying type:

$$\mathrm{PE} = \frac{C_0 - C_1}{C_0} \times 100$$

where

PE is the protection rate, in percent;

C_0 is the harmful material concentration in the ambient air;

C_1 is the harmful material concentration in the inhaled breath.

A.243
qualified person: CSA Z94.4
individual who possesses the knowledge, experience, and training to fulfill the competencies of the roles defined in this standard

A.244
quarter mask: EN 132
tight fitting facepiece covering mouth and nose

A.245
rapid intervention crew/company universal air connection system: NFPA 1981[3)]
RIC UAC
system that allows emergency replenishment of breathing air to the SCBA of disabled or entrapped fire or emergency services personnel

A.246
regulator: AS/NZS 1715
device for controlling air flow

A.247
relief valve: EN 132
valve to release overpressure

A.248
replaceable type particulate respirator: JIS T 8001
particulate respirator designed to serve further use by replacing its components when damaged

A.249
required fit factor: ANSI Z88.10
RFF
numeric value established as a pass/fail point or acceptance criterion for quantitative fit testing

A.250
required minimum protection factor: AS/NZS 1715
protection factor required to reduce exposure to an accepted level

NOTE This factor is expressed as a ratio of the measured ambient airborne concentration of a contaminant to an acceptable exposure level or standard.

A.251
respirable air: AS/NZS 1715
air of quality intended to be suitable for human respiration

NOTE This is also sometimes called breathable air.

A.252
respirable dust fraction: AS/NZS 1715
mass fraction of total airborne particles which is inhaled through the nose and mouth

NOTE The inhalable fraction depends on the Speed and direction of the air movement, on the rate of breathing and other factors.

[ISO 7708:1995, definition 2.3.]

A.253
respirator: ANSI Z88.2
personal device designed to protect the wearer from the inhalation of hazardous atmospheres

A.254
respirator: CSA Z94.4
device to protect the user from inhaling a hazardous atmosphere

A.255
respirator: AS/NZS 1715
personal respiratory protective device which is designed to prevent the inhalation of contaminated air

A.256
respiratory inlet covering: ANSI Z88.2
portion of a respirator that connects the wearer's respiratory tract to an air-purifying device or respirable gas source, or both

NOTE This covering may be a facepiece, helmet, hood, suit, or mouthpiece/nose clamp.

A.257
respiratory inlet covering: OSHA 1910.134
portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both

NOTE This covering may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp

A.258
respiratory inlet covering: JIS T 8001
generic term for facepieces, faceshields, hoods and mouthpieces, which are principally worn over the face for respiratory protection

A.259
respiratory protective devices (equipment): JIS T 8001
generic term for individual protective devices worn for respiratory protection in an ambient atmosphere which may be hazardous to the human body

A.260 Safety valves

A.260.1
safety valve: JIS T 8001
release valve, accessory of a compressed-gas cylinder which automatically releases the gas stored in the cylinder when its inner pressure has exceeded the setting value

NOTE Automatic-reset type and non-automatic type are available.

A.260.2
safety valve: JIS T 8001
release valve which releases air only when the pressure at a breathing tube has exceeded the setting value

A.261
SCBA: NFPA 1981[3)]
abbreviation for self-contained breathing apparatus

NOTE For the purposes of this International Standard, where this abbreviation is used without any qualifier, it indicates only open-circuit self-contained breathing apparatus and combination SCBA/SARs.

See Combination SCBA/SAR, and Self-Contained Breathing Apparatus.

A.262
SCBA/SAR: NFPA 1981[3)]
abbreviation for combination open-circuit SCBA and supplied air respirator

See Combination SCBA/SAR, Self-Contained Breathing Apparatus, and Supplied Air Respirator.

A.263
self-contained breathing apparatus: ANSI Z88.2 SCBA
atmosphere-supplying respirator in which the respirable gas source is designed to be carried by the wearer

A.264
self-contained breathing apparatus: CSA Z94.4 SCBA
accepted respirator that has a portable supply of breathing gas and is independent of the ambient atmosphere

NOTE This apparatus includes both open-circuit and closed circuit respirators.

A.265
self-contained breathing apparatus: AS/NZS 1715
SCBA
portable respirator that supplies oxygen, air or other respirable gas from a source carried by the user

A.266
self-contained breathing apparatus: EN 132
breathing apparatus where the breathing gas supply is carried by the wearer

A.267
self-contained breathing apparatus: JIS T 8001
SCBA
generic term for respiratory protective devices, designed for the wearer to carry a source of supplying air, oxygen or breathable gas to be consumed in breathing

NOTE The apparatus is available in open and closed circuit.

A.268
open circuit and closed circuit oxygen SCBA: JIS T 8001
generic term for open-circuit SCBA and closed circuit oxygen SCBA

A.269
self-contained closed-circuit breathing apparatus: EN 132
chemical oxygen escape apparatus (KO_2)
RPD for escape only; function based on chemically generated oxygen (KO_2) in a closed breathing circuit

A.270
self-contained closed-circuit breathing apparatus: EN 132
chemical oxygen escape apparatus ($NaClO_3$)
RPD for escape only; function based on chemically generated oxygen (NaClO3) in a closed breathing circuit

A.271
self-contained closed-circuit breathing apparatus: EN 132
compressed oxygen escape apparatus
RPD for escape only; function based on compressed oxygen in a closed breathing circuit

A.272
self-contained closed-circuit oxygen breathing apparatus: EN 132
self-contained breathing apparatus which removes carbon dioxide from the exhaled air and adds oxygen or oxygen/nitrogen to the inhaled air for breathing by the wearer and is independent of the ambient atmosphere

A.273
self-contained open-circuit compressed air breathing apparatus: EN 132
self-contained breathing apparatus which has a portable supply of compressed air and is independent of the ambient atmosphere

NOTE The exhaled air passes without recirculation to the ambient atmosphere.

A.274
self-contained open-circuit compressed air breathing apparatus with full face mask or mouthpiece assembly for escape: EN 132
RPD for escape only; function based on air supply from a high pressure cylinder to full face mask or mouthpiece assembly

A.275
self-contained open-circuit compressed air breathing apparatus with hood for escape: EN 132
RPD for escape only; function based on air supply from a high pressure cylinder to a hood

A.276
self-rescue for carbon monoxide: JIS T 8001
escape mask to be used when escaping from carbon monoxide and smokes generated in a fire and explosion at a mine, etc.

A.277
semi closed-circuit SCBA: JIS T 8001
self-contained breathing apparatus intended to use at a high atmospheric pressure with the structure to supply continuously oxygen/inert gas (e.g. nitrogen) mixture in stead of oxygen in order to control the oxygen partial pressure of the inhaled air within an adequate range

NOTE At the same time, a portion of air inside the device is exhausted to the outside to use a portion of the remnant for rebreathing.

A.278
semi open-circuit SCBA: JIS T 8001
self-contained breathing apparatus designed to supply the wearer with air, oxygen or breathable gas from a compressed-gas cylinder through the air-supply valve, etc.

NOTE This type of apparatus is designed to exhaust a portion of the exhaled air to the ambient atmosphere through an exhalation valve(s) and to reuse a portion of it for inhalation without purification. The demand type and constant supply type are available.

A.279
separator: EN 132
device to remove liquids from compressed air

A.280
service life: JIS T 8001
gas removing capacity
capacity of the chemical cartridge/canister to detoxify the toxic gas in the ambient air which passes through it

NOTE This capacity is expressed by the breakthrough time when a constant concentration of toxic gas is passed through it.

A.281
service outlet: CSA Z94.4
outlet point in a compressed breathing air system where a connection is made to an accepted respirator or a cylinder-filling device

NOTE It is an assembly that may consist of fittings, manifold, pressure regulator, and quick disconnect, or a combination thereof.

A.282
simulated workplace protection factor AIHA SWPF
measure of respirator performance that is done in a laboratory using test exercises designed to simulate work

NOTE SWPF is determined by measuring a test atmosphere concentration outside the (Co) and inside (Ci) a properly functioning respirator that is properly worn (SWPF = C_o/C_i). The validity of the SWPF as a surrogate for WPF depends on how well the test exercises represent the work to be done

A.283
single use low-boiling point filter: AS/NZS 1716
category of filter intended to be used solely against low boiling point organic compounds during a single 8 h shift

NOTE During this period, the total logged period of use does not exceed the minimum specified absorption time of the filter. It is intended that the filter be discarded after such a period of use

A.284
single-use respirator: NIOSH 42 CFR 84
respirator that is entirely discarded after excessive resistance, sorbent exhaustion, or physical damage renders it unsuitable for further use

A.285
smoke-filtering efficiency: JIS T 8001
efficiency of removing particulates in smoke by means of a filter, etc.

NOTE Certain tests are carried out using smouldering smoke from wood or smoke causing inflammation from styrene foam

A.286
smoke hood: EN 132
RPD for escape only. Function based upon a filter through which ambient air is drawn to a hood

A.287
speaking diaphragm: JIS T 8001
device to transmit externally the wearer's voice with a full facepiece, etc by means of a voice-transmitting diaphragm

A.288
spiral coiled tube: EN 132
tube which is manufactured such that being in its relaxed state it assumes a natural spiral coil

A.289
suit: ANSI Z88.2
respiratory inlet covering designed to cover the entire body

NOTE This term does not include protective clothing that only provides skin protection.

A.290
supplied-air respirator: AS/NZS 1715
device which supplies air to the wearer from a source other than the ambient atmosphere

A.291
supplied-air respirator: CSA Z94.4
accepted respirator and air supply hose with a hood/helmet, a tight fitting facepiece, or a loose-fitting facepiece/visor that is supplied with compressed breathing air from a compressed breathing air system

A.292
supplied-air respirator: JIS T 8001
respiratory protective device designed to deliver clean air to the wearer from a source of air supply through a hose or medium-pressure hose and facepiece, etc.

A.293
supplied air respirator: NFPA 1981[3)]
airline respirator
atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user

A.294
supplied-air respirator: OSHA 1910.134
airline respirator
SAR
atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user

A.295
supplied-air suit: CSA Z94.4
suit that is impermeable to specific particulate and gaseous contaminants and is provided with a supply of compressed breathing air that is adequate for the user and capable of maintaining a positive pressure inside the suit

A.296
supplied-oxygen respirator: AS/NZS 1715
device that supplies oxygen is from a source of liquid or compressed oxygen carried by the wearer

A.297
SX filter: EN14387
for use against specific named gases and vapours as specified by the manufacturer

A.298
test contaminants: JIS T 8001
particulates or gases for measuring the total inward leakage of a respiratory protective device, filtering efficiency of a filter and service life of a chemical cartridge/canister, etc.

NOTE As the particulate matter: DOP (dioctyl phthalate) particles and NaCl (sodium chloride) particles, etc, and as the gases: cyclohexane, ammonia and chlorine, etc.

A.299
tight-fitting facepiece: ANSI Z88.2
respiratory inlet covering that is designed to form a complete seal with the face

NOTE A half-facepiece (including a quarter mask, disposable masks, and masks with elastomeric facepieces) covers the nose and mouth; a full facepiece covers the nose, mouth, and eyes

A.300
tight-fitting facepiece: CSA Z94.4
respirator inlet covering that forms a complete seal with the face

NOTE This includes a quarter-facepiece that covers the user's nose and mouth above the chin; a half-facepiece that covers the user's nose and mouth under the chin; and a full-facepiece that covers the user's nose, eyes, and mouth under the chin.

A.301
tight fitting type respirator: JIS T 8001
respiratory protective device designed to prevent leakage of the ambient air by tightly fitting a portion (facepiece and mouthpiece) of the respirator over the wearer's face, etc.

A.302
toxic gas: JIS T 8001
generic term for gases and vapours hazardous to human body in a small quantity

EXAMPLE Chlorine, hydrogen cyanide and benzene.

A.303
tube: EN 132
hollow conduit to carry air at pressures in excess of ambient pressure

A.304
turbo filtering device: EN 132
see **power assisted** and **powered filtering device**

A.305
type N particulate filter: CSA Z94.4
NIOSH classification for particulate filter effective against particulate aerosols free of oil

NOTE 1 Time-use restrictions may apply.

NOTE 2 Three filter efficiency levels are tested and certified: 99,97 %, 99 %, and 95 %, referred to as classes 100, 99, and 95, respectively.

A.306
type P particulate filter: CSA Z94.4
NIOSH classification for particulate filter effective against all particulate aerosols

NOTE Three filter efficiency levels are tested and certified: 99.97 %, 99 %, and 95 %, referred to as classes 100, 99, and 95, respectively.

A.307
type R particulate filter: CSA Z94.4
NIOSH classification for particulate filter effective against all particulate aerosols

NOTE 1 Time-use restrictions may apply.

NOTE 2 Three filter efficiency levels are tested and certified: 99.97 %, 99 %, and 95 %, referred to as classes 100, 99, and 95, respectively.

A.308
universal air connection (UAC): NFPA 1981[3)]
male fitting, affixed to the SCBA, and the female fitting, affixed to the filling hose, to provide emergency replenishment of breathing air to an SCBA breathing air cylinder

NOTE Also known as Rapid Intervention Crew/Company Universal Air Connection.

A.309
user seal check: OSHA 1910.134
action conducted by the respirator user to determine if the respirator is properly seated to the face

A.310
user seal check: CSA Z94.4
action conducted by the respirator user to determine if the respirator is properly seated to the face

A.311
valved filtering half mask: EN 132
filtering half mask fitted with exhalation and inhalation valves

A.312
visual field: JIS T 8001
range of vision observed without moving the head. It is expressed by the angles of the upper, lower, left and right sides

A.313
warning device: EN 132
device to inform the user that the RPD will soon stop or has already stopped operating at the desired conditions

A.314 Warning devices

A.314.1
warning device: JIS T 8001
alarm
device to give an alarm to the wearer in case the pressure inside the compressed-gas cylinder may fall to the set value and below while using a SCBA utilizing air, oxygen or respirable gas

A.314.2
warning device: JIS T 8001
alarm
device to indicate a dangerous occurrence while using a respiratory protective device

A.315
water based aerosol: EN 132
aerosols produced from solutions and/or suspensions of particulate materials in water such that the only workplace contaminant is attributed to this solid material

A.316
workplace protection factor: AIHA
WPF
measure of the protection provided in the workplace, under the conditions of that workplace, by a properly selected, fit tested and functioning respirator while it is correctly worn and used

NOTE 1 WPF is a direct measurement of respirator performance capabilities in a specific work environment. It represents the workplace contaminant concentration outside the respirator (Co) divided by the contaminant concentration inside the respirator (Ci) (WPF=Co/Ci). Co and Ci are measured simultaneously only while the respirator is properly worn and used during normal work activities.

NOTE 2 Ci measurements made using respirators that are poorly maintained, improperly used, or not worn during the entire exposure period are inappropriate for WPF determination.

A.317
workplace protection factor: EN529
ratio between the breathing zone concentration (outside the facepiece) of a chosen hazardous substance and its concentration inside the facepiece (suitable sampler being placed as near as possible to the mouth of respiratory protective device wearer) of a correctly functioning respiratory protective device when correctly worn and used in the work place. The workplace protection factor may be expressed as:

workplace protection factor = concentration within the breathing zone (outside the facepiece) ÷ concentration inside the facepiece

A.318
work sets: AS/NZS 1716
self-contained breathing apparatus designed for general entry to or working in an area with airborne contaminants or oxygen deficiency

Annex B
(informative)

Abbreviations used

B.1
BTPS
body temperature pressure saturated

B.2
CMD
count median diameter

B.3
EMC
electromagnetic compatibility

B.4
ESLI
end-of-service-life indicator

B.5
HUD
heads up display

B.6
IDLH
immediately dangerous to life or health

B.7
MMDF
manufacturer's minimum design flow rate

B.8
MMAD
mass median aerodynamic diameter

B.9
MRPF
minimum required protection factor

B.10
MUC
maximum use concentration

B.11
OEL
occupational exposure limit

B.12
QLFF
qualitative fit factor

B.13
QLFT
qualitative fit test

B.14
QNFF
quantitative fit factor

B.15
QNFT
quantitative fit test

B.16
RFF
required fit factor

B.17
RPD
respiratory protective device

B.18
STPD
standard temperature dry pressure

B.19
TIL
total inward leakage

B.20
TWA
time-weighted average

B.21
UV
ultraviolet

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