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# ISO/FDIS 22932-7

# Mining — Vocabulary —

## Part 7: Ventilation

*Exploitation minière — Vocabulaire —*

*Partie 7: Ventilation*

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# Foreword

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# Introduction

The ISO 22932 series has been prepared in order to standardize and to co-ordinate the global use of technical terms and definitions in mining, for the benefit of the experts working on different types of mining activities.

The need for the ISO 22932 series arose from the widely varying interpretation of terms used within the industry and the prevalent use of more than one synonym.

# Mining — Vocabulary —

# Part 7: Ventilation

## 1 Scope

This document specifies the commonly used terms and definitions in underground mine ventilation. Only those terms and definitions that have a specific meaning in this field are included.

NOTE Some terms and definitions are also applicable to surface mining.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/



### 3.1 Gases in mine air

**3.1.1**
**mine air**
mixture of gases circulating through the workings

**3.1.1.1**
**damp**
*mine air* (3.1.1) deficient in oxygen

**3.1.1.1.1**
**afterdamp**
*damp* (3.1.1.1) that remain in a mine after a mine fire or an explosion of *combustible gases* (3.2.1)

Note 1 to entry: Afterdamp consists of carbonic acid gas, water vapor (quickly condensed), nitrogen, oxygen, carbon monoxide, and in some cases free hydrogen.

Note 2 to entry: Afterdamp is breathable.

Note 3 to entry: See also blackdamp; damp.

Note 4 to entry: See Reference [1].

**3.1.1.1.2**
**blackdamp**
*afterdamp* (3.1.1.1.1) containing carbon dioxide and nitrogen in excess of the normal percentage, and in which a *flame safety lamp* (3.4.1.1) will not burn owing to a deficiency of oxygen

Note 1 to entry: The average blackdamp contains 10 % to 15 % carbon dioxide and 85 % to 90 % nitrogen.

Note 2 to entry: Blackdamp is formed by mine fires and the explosion of combustible gases in mines, and hence forms a part of the afterdamp.

Note 3 to entry: It extinguishes light and suffocates its victims. Hence, it is sometimes known as chokedamp.

Note 4 to entry: See Reference [1].

**3.1.1.1.3**
**chokedamp**
mine atmosphere that causes choking or suffocation due to insufficient oxygen

Note 1 to entry: See Reference [1].

**3.1.1.1.4**
**white damp**
*damp* (3.1.1.1) composed of carbon monoxide (CO)

Note 1 to entry: White damp can be present in the afterdamp of a gas- or coal-dust explosion, or in the gases given off by a mine fire; also one of the gases produced by blasting.

Note 2 to entry: White damp is an important constituent of illuminating gas, supports combustion, and is very poisonous because it is absorbed by the hemoglobin of the blood to the exclusion of oxygen.

Note 3 to entry: See Reference [1].



**3.1.2**
**noxious gas**
*mine air* (3.1.1) that contains gas which is injurious to health

**3.1.2.1**
**ill air**
noxious gas, as from underground fires or chokedamp



Note 1 to entry: Ill air stagnant state of the atmosphere underground.

Note 2 to entry: See Reference [1].

**3.1.2.2**
**stifle**
*noxious gas* (3.1.2) resulting from an underground fire

Note 1 to entry: See Reference [1].

**3.1.3**
**foul air**
main air contaminated by powder fumes, noxious gases, or respirable dust

Note 1 to entry: See Reference [1].

**3.1.4**
**stythe**
*mine air* (3.1.1) containing carbonic acid gas, often found in old workings and given off in most shallow mines

Note 1 to entry: Also spelled stithe.

Note 2 to entry: See Reference [1].

**3.1.5**
**air blast**
strong rush of *mine air* (3.1.1) through the workings

Note 1 to entry: Air blasts can occur caused by an explosion, a movement of large masses of strata, an outburst of coal or by a movement of a body of water.

**3.1.6**
**air current**
**air flow**
flow of *mine air* (3.1.1) ventilating the workings of a mine

**3.1.6.1**
**circulation of mine air**
dominated air current

Note 1 to entry: The circulation of air aims to ensure adequate ventilation of all workings and roadways.

Note 2 to entry: See Reference [1].

**3.1.6.1.1**
**re-circulation**
continuous *circulation ofmine air* (3.1.6.1) of all or some part of the same air in part of a *mine ventilation system* (3.9.2.1)

**3.1.7**
**air requirement**
quantity of *mine air* (3.1.1) required by law or practical considerations to maintain adequate ventilation of a mine

Note 1 to entry: This quantity will depend on (1) the length of face room in production, (2) the average distance from the shafts to the faces, (3) the gas emission rate, (4) the depth of the workings, (5) the volumetric efficiency of the mine ventilation, (6) heat loads and (7) time to evacuate blast gases.

Note 2 to entry: See Reference [1].

**3.1.8**
**air power**
**air horsepower**
**horsepower of ventilation**
energy is used in moving *mine air* (3.1.1) between two points of a mine, in “W”, “kW” and “hp”

Note 1 to entry: Air power is measured by the quantity circulated multiplied by the ventilating pressure required as follow

$$N = PQ$$

where

$P$ pressure of air, in Pascal;

$Q$ quantity of air flowing, in cubic meters per second.

**3.1.9**
**fugitive air**
*mine air* (3.1.1) moving through the fan that never reaches the working faces

Note 1 to entry: See Reference [1].

**3.1.10**
**dead air**
stagnant *mine air* (3.1.1)

**3.1.11**
**return air**
*mine air* (3.1.1) travelling in a return and typically exhausting to atmosphere

## 3.2 Combustible gases environment

**3.2.1**
**combustible gas**
**firedamp**
**marsh gas**
flammable gas, consisting mainly of methane

Note 1 to entry: Generally, combustible gas is found naturally in coal mines.

Note 2 to entry: If the decaying matter at the bottom of a marsh or pond is stirred, bubbles of methane rise to the surface, thus the name marsh gas.

Note 3 to entry: It is nonexplosive until met with mine air or oxygen and a heat or ignition source.

Note 4 to entry: See Reference [1].

**3.2.1.1**
**combustible gas migration**
movement of *firedamp* (3.2.1) through the strata or the waste left in old mine workings

**3.2.2**
**combustible gas fringe**
zone of contact between the goaf gases and the ventilating *air current* (3.1.6) at the face

Note 1 to entry: See Reference [1].



**3.2.3**
**layering of combustible gas**
formation of a of *combustible gas layer* (3.2.3) at the roof of a mine working and above the ventilating air current

Note 1 to entry: See Reference [1].



**3.2.3.1**
**combustible gas layer**
formation of a of combustible gas layer at the roof of a mine working and above the ventilating air current

Note 1 to entry: A combustible gases layer can be specified as one in which the gas is 5 % or over and of a length greater than the width of the road in which it occurs on the other hand a combustible gases layer can be specified as one in which the gas is 5 % or over.

Note 2 to entry: Combustible gas layer frequently appears as sheetlike accumulation of combustible gas where the ventilation is too sluggish to dilute and remove the gas.

Note 3 to entry: See Reference [1].

**3.2.3.2**
**roof layer**
*combustible gas layer* (3.2.3) under the roof of a mine working

Note 1 to entry: Roof layer can flow either with or against the ventilation.

**3.2.3.2.1**
**backing**
action of a *roof layer* (3.2.3.2) of *combustible gases* (3.2.1) flowing uphill against the direction of the ventilation

**3.2.3.3**
**free streaming**
*combustible gases* (3.2.1)*roof layer* (3.2.3.2) flowing under the action of buoyancy without ventilation

Note 1 to entry: See Reference [1].

**3.2.4**
**flammable fringe**
**explosive fringe**
region in a *mine ventilation system* (3.9.2.1) where *mine air* (3.1.1) or other reactant gas and a flammable gas are present, in which the two gases have mixed to produce a gas capable of propagating flame

**3.2.5**
**methane drainage**
capture of the concentrated methane through boreholes drilled into a coalbed or associated strata

Note 1 to entry: See Reference [1].

**3.2.5.1**
**gas emission rate**
quantity of methane discharged from the strata and coal seams into the ventilating air of a coal mine

Note 1 to entry: The gas emission rate can be expressed on a time or tonnage basis. Gas emission varies with

— the rate of advance of the workings;

— the nature of the face operation such as cutting, blasting, loading, etc. and

— the barometric reading.

Note 2 to entry: See Reference [1].



**3.2.6**
**combustible gas drainage**
collection of *combustible gas* (3.2.1) from coal measures strata

Note 1 to entry: Combustible gas drainage, generally is fed into pipes, with or without the use of suction.



Note 2 to entry: See Reference [1].

**3.2.7**
**leakage**
unintentional diversion of ventilation air from its designed path

**3.2.7.1**
**leakage intake**
gate road ventilated by a supervised *leakage* (3.2.7) of air from an intake airway

**3.2.7.2**
**waste drainage**
dominated *leakage* (3.2.7) of air through a waste

Note 1 to entry: Waste drainage is carried out to ensure that large concentrations of mine gases do not accumulate in that waste.

**3.2.8**
**blower**
**high emission**
<combustible gas environment> discharge of gas, normally combustible gas, under pressure

Note 1 to entry: Compare with outburst.

Note 2 to entry: See also venture.