

Glossary of
Mining terms —

Section 2: Ventilation

Confirmed
January 2011

Co-operating organizations

The Mining and Quarrying Requisites Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government department and scientific and industrial organizations:

Association of Mining Electrical and Mechanical Engineers*
 British Electrical and Allied Manufacturers' Association
 British Steel Industry
 Department of Trade and Industry*
 Engineering Equipment Users' Association
 Federation of Associations of Mining Equipment Manufacturers
 Federation of Manufacturers of Construction Equipment and Cranes
 Institute of Quarrying
 Institution of Mechanical Engineers
 Institution of Mining Engineers*
 Mechanical Handling Engineers' Association
 National Coal Board*

The Government department and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Institution of Mining and Metallurgy
 University of Birmingham
 University of London
 University of Nottingham

This British Standard, having been approved by the Mining and Quarrying Requisites Industry Standards Committees, was published under the authority of the Executive Board on 18 February 1971

© BSI 12-1999

First published May 1963
 First revision February 1971

The following BSI references relate to the work on this standard:
 Committee reference MQE/17
 Draft for approval 69/21048

ISBN 580 06118 3

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Co-operating organizations	Inside front cover
Foreword	ii
Glossary	1

Foreword

This glossary has been prepared, under the authority of the Mining and Quarrying Requisites Industry Standards Committee, in order to standardize and to co-ordinate the technical terms in current use in mining in the United Kingdom. Although the majority of the terms defined in the original edition of this glossary were primarily concerned with coal mining, account has been taken of terms used in other forms of mining and of quarrying.

The need for this glossary arose from the widely varying interpretation of terms used within the industry, and the prevalent use of more than one synonym, some purely local in origin, to indicate specific meanings.

The glossary has been issued in a number of sections, according to subject matter, as follows:

- *Section 1: Planning and surveying;*
- *Section 2: Ventilation;*
- *Section 3: Boring and exploration;*
- *Section 4: Drainage;*
- *Section 5: Geology;*
- *Section 6: Drilling and blasting;*
- *Section 7: Electrical engineering and lighting;*
- *Section 8: Winning and working;*
- *Section 9: Shafts and associated equipment;*
- *Section 10: Transport;*
- *Section 11: Strata control.*

Section 2, “*Ventilation*”, was one of the first publications in the BS 3618 series. In the normal process of periodical review it was seen that a number of modifications and additions were desirable; therefore, since the previous edition was dated 1963, it was decided to publish a revision incorporating these changes.

In compiling the glossary account has been taken of the fact that terms primarily associated with coal are separately defined in BS 3323, “*Glossary of coal terms*”, and terms relating to coal preparation are defined in BS 3552, “*Glossary of terms used in coal preparation*”. The following factors also have applied in the statement, selection and definition of terms:

- 1) Where two or more terms are grouped together, the term which is favoured is printed first and in heavy type. It is hoped that such preferred terms will gradually displace the non-preferred terms. The non-preferred terms of a group are printed in small capital letters. Where the use of any term is considered to be undesirable it is marked *deprecated*.
- 2) Generally, only terms which have a specific meaning in this field have been included. Where a technical term has an accepted meaning in other fields of engineering it has been omitted; the few exceptions are terms which are of particular importance in mining.
- 3) Purely local terms are not defined, but those of sufficient importance are included as non-preferred terms.
- 4) Obsolete terms are excluded.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 7 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Glossary

Term	Definition
afterdamp	The mixture of gases which remains in a mine after a fire or an explosion of firedamp or coal dust. It consists of carbon dioxide, water vapour, nitrogen, oxygen, carbon monoxide and other gases.
air	The atmospheric air circulating through and ventilating the workings of a mine.
air adit	An adit driven for the purpose of ventilating a mine.
air blast	A strong rush of air through the workings, caused by an explosion, a movement of large masses of strata, an outburst of coal or by a movement of a body of water.
air bridge	See <i>air crossing</i> .
air compartment	An airtight portion of any shaft, winze, raise or level used for ventilation.
aircourse	See <i>airway</i> .
air crossing AIR BRIDGE, <i>deprecated</i>	A bridge, natural or constructed, at the crossing of two airways which allows air to be conducted along both roadways without substantial leakage of air from one roadway to the other.
air current AIR FLOW AIR QUANTITY	The flow of air ventilating the workings of a mine.
air door DOOR SEPARATION DOOR TRAP DOOR, <i>deprecated</i>	A door erected in a roadway to prevent the passage of air. (When doors are erected between an intake and a return airway they may be known as "separation doors".)
air drift	A roadway, generally inclined, driven in stone for ventilation purposes.
air duct	Tubing which conducts air, usually from an auxiliary fan, to or from a point as required in the mine.
air flow	See <i>air current</i> .
air gate	A gate road used principally for ventilation.
air hole	A small excavation or hole made to improve ventilation by communication with other workings or with the surface. (See also <i>cundy</i> .)
air horsepower	See <i>air power</i> .
air lock	1. A system of doors arranged to allow the passage of men or vehicles through it without permitting appreciable air flow. 2. See <i>shaft casing</i> .
air pit	See <i>air shaft</i> .
air power AIR HORSEPOWER	The rate at which energy is used in moving air between two points.
air quantity	See <i>air current</i> .
air shaft AIR PIT, <i>deprecated</i>	A mine shaft the main purpose of which is for ventilation.
air slit	See <i>stenton</i> .
air split	1. A separate ventilation circuit formed by dividing a current of air. 2. See <i>split</i> .
airway AIR COURSE WIND ROAD, <i>deprecated</i>	A roadway used mainly for ventilation purposes.
antitropal ventilation	Ventilation by a current of air travelling in the opposite direction to that of the flow of mineral out of the mine.

Term	Definition
artificial ventilation	The inducing of a flow of air through a mine or part of a mine by mechanical or other means.
ascensional ventilation	The arrangement of the ventilating currents so that the air rises through the working face.
Assmann psychrometer	A wet and dry bulb hygrometer in which air is drawn over the thermometer bulbs by an integral fan.
Atkinson	A unit of resistance to air flow.
automatic doors	Air doors on a haulage road that are automatically operated by a passing vehicle or train of tubs, or other means.
auxiliary fan	A fan used to provide ventilation in a dead end.
axial-flow fan SCREW FAN, <i>deprecated</i>	A fan having a cylindrical casing in which the air enters and leaves the impeller in a direction substantially parallel to its axis.
back blast	See <i>backlash</i> .
backing	The action of a firedamp roof layer flowing uphill against the direction of the ventilation.
backlash BLACK BLAST SUCTION BLAST, <i>deprecated</i>	In an explosion, a blast back in the opposite direction to that of the spread of the explosion.
blackdamp CHOKEDAMP, <i>deprecated</i> STITHE, <i>deprecated</i> STYTHER, <i>deprecated</i>	A mine atmosphere containing carbon dioxide and nitrogen in excess of the normal percentage, and in which a flame safety lamp will not burn owing to a deficiency of oxygen.
blind heading	See <i>dead end</i> .
blower HIGH EMISSION	A discharge of gas, normally firedamp, under pressure from a hole or fissure in the strata, which lasts for an appreciable time (cf. <i>outburst</i>). (See also <i>venturi</i> .)
bolt hole	A short connecting passage made for ventilation purposes.
bonnet	A protective cover for the gauzes of a flame safety lamp.
booster fan	A fan located in a mine roadway to increase the pressure of the whole of the air passing through that roadway so as to increase the air current.
branch	Part of a ventilation circuit from which no splits are made.
brattice SCREEN, <i>deprecated</i>	<ol style="list-style-type: none"> 1. A board or plank lining or other partition in any mine passage, to divert the air into the working places. Temporary brattices are often made of cloth. (See <i>brattice sheeting</i>.) 2. An airtight partition in a mine shaft to separate intake from return air.
brattice cloth	See <i>brattice sheeting</i> .
brattice sheeting BRATTICE CLOTH, <i>deprecated</i> SHEETS, <i>deprecated</i>	A curtain or screen of flexible material used to direct or control the flow of ventilating air.
break-through	See <i>stenton</i> .
brush WAFT	<ol style="list-style-type: none"> 1. To disperse an accumulation of firedamp by fanning the air by hand. 2. See also <i>Winning and working</i> section.
calorimeter room	A place at the surface of the mine where drained firedamp is monitored or its heat content ascertained.
cap GAS CAP	The halo of ignited firedamp which shows above the lowered flame of a safety lamp when burning in air containing small quantities of firedamp. The percentage of firedamp can be roughly measured by the height of the cap.

Term	Definition
casing (of fan)	Those stationary parts of a fan, not including guide vanes, which guide air to and from the impeller.
centrifugal fan	See <i>radial-flow fan</i> .
chokedamp	See <i>blackdamp</i> .
compound ventilation	An arrangement of a number of major ventilation systems serving various large working areas and served by more than two shafts and their associated fans, but integrated to form one ventilation system. Usually adopted in large “combined” mines. (See <i>radial ventilation</i> .)
contra-rotating fan	An axial-flow fan having impellers rotating in opposite directions.
$\frac{\text{CO}}{\text{O}_2 \text{ deficiency}}$ ratio	Volume ratios, derived from an analysis of a sample of an underground atmosphere, which give an indication of the rate of oxidation in an area.
$\frac{\text{CO}_2}{\text{O}_2 \text{ deficiency}}$ ratio	
$\frac{\text{CO}}{\text{CO}_2}$ ratio	
course	<ol style="list-style-type: none"> 1. To control the direction of the ventilation through the workings. 2. To ventilate a number of faces in series.
crosscut	<ol style="list-style-type: none"> 1. See <i>stenton</i>. 2. See also <i>Winning and working</i> section.
cross-hole	See <i>stenton</i> .
cross-measure borehole	A borehole drilled at an angle through the rock strata generally for the purpose of firedamp drainage.
cundy	Any small passageway made to improve ventilation or facilitate movement of materials. It is generally made through a pack or along the rib-side of a longwall face.
damp	Any mine gas, or mixture of gases. (From the German “dampf”.)
dead	Unventilated.
dead air	Stagnant air.
dead end	A cul-de-sac.
BLIND HEADING	
deputy	An underground official in a mine of coal, stratified iron-stone, shale or fireclay, with statutory responsibility for the safe and proper working of a district of the mine.
EXAMINER, <i>deprecated</i>	
FIREMAN, <i>deprecated</i>	
descensional ventilation	The arrangement of the ventilating currents so that the air passes downwards through the working face.
diffuser (fan)	See <i>evasée</i> .
door	See <i>air door</i> .
double-inlet fan	A centrifugal fan in which air enters the impeller on both sides.
downcast shaft	A shaft through which fresh air is drawn or forced into the mine.
ducting	Sections of air duct.
dumb drift	A passage leading from an airway to a point in a shaft some distance above an inset to allow the ventilating current to by-pass a station where skips or cages are loaded.
effective temperature	A measure of environmental comfort. Its value, for any particular condition of air velocity and wet and dry bulb temperatures, is given by the temperature of still saturated air which provides the same degree of comfort, or sensation of warmth or cold.
emission (of gas)	The exudation of gas from the strata (See also <i>blower</i> .)

Term	Definition
equivalent orifice	A measure of the air resistance of a mine in terms of the area of a circular orifice in a thin plate which requires the same pressure difference when passing a certain quantity of air as that needed to circulate that quantity through the workings of the mine.
evasée DIFFUSER (FAN)	An outlet passage of gradually increasing cross-sectional area leading from a fan.
examiner	See <i>deputy</i> .
exhaust ventilation	A system of ventilation in which the fan draws air through the workings by suction (cf. <i>forced ventilation</i>).
explosive fringe	See <i>flammable fringe</i> .
eye	1. The top or mouth of a shaft. 2. The central or intake opening of a radial-flow fan.
fan drift	An airway leading from a mine shaft, or airway, to a fan.
fan shaft	1. The ventilating shaft to which a mine fan is connected. 2. The spindle on which a fan impeller is mounted.
fan static pressure	The difference between the fan total pressure and the fan velocity pressure.
fan total pressure	The algebraic difference between the mean total pressure at the fan outlet and the mean total pressure at the fan inlet.
fan velocity pressure	The velocity pressure corresponding to the average velocity at the fan outlet.
fiery	A condition arising from the presence of flammable gas and/or coal dust.
firedamp MARSH GAS, <i>deprecated</i> METHANE, <i>deprecated</i>	A flammable gas, consisting mainly of methane, found naturally in mines.
firedamp alarm	An instrument that gives warning when the percentage of flammable gases reaches a predetermined value.
firedamp drainage METHANE DRAINAGE, <i>deprecated</i>	The collection of firedamp from coalmeasures strata, generally into pipes, with or without the use of suction.
firedamp migration	The movement of firedamp through the strata or goaf of a mine.
fireman	See <i>deputy</i> .
flame safety lamp	An oil or spirit burning lamp designed and approved for use in testing for gas. (See <i>safety lamp</i> .)
flammable fringe EXPLOSIVE FRINGE	In a system where air (or other reactant gas) and a flammable gas are present, that region in which the two gases have mixed to produce a gas capable of propagating flame.
forced ventilation	A system of ventilation in which the fan forces air through the workings under pressure (cf. <i>exhaust ventilation</i>).
fuel cap	A faintly luminous fringe around the testing flame of a safety lamp perceptible whether or not firedamp is present (cf. <i>cap</i>).
Garforth lamp	A modified flame safety lamp, which permits samples of mine air to be injected from a sampling bulb so as to surround the base of the flame.
gas	The term generally applied to denote firedamp.
gas cap	See <i>cap</i> .
gas emission	The release of gas from the strata into the mine workings.
gauzes	The wire mesh used to prevent the passage of flame from a flame safety lamp to the external atmosphere.
geothermic gradient	The rate of increase of strata temperature with increase in depth below the surface.
gob stink STINK, <i>deprecated</i>	The odour given off by the spontaneous heating of coal, not necessarily in the gob.

Term	Definition
high emission	See <i>blower</i> .
homotropical ventilation	Ventilation by a current of air travelling in the same direction as the flow of mineral out of the mine.
hurdle	A temporary screen or curtain to deflect the air upwards against the roof to disperse gas.
intake (airway)	Any airway which carries the ventilating air into the mine and inbye.
isogeotherm	A contour beneath the earth's surface through points which have the same mean temperature.
kata cooling power	A measure of the cooling effect of the ambient air as determined by the kata thermometer. This instrument may be used wet or dry.
kata thermometer	A type of alcohol thermometer used to determine the cooling power of the ambient air and sometimes to measure low air velocities.
layering number	A number, based on the air velocity in a mine roadway, the rate of emission of firedamp into a roof layer, and the roadway width. The value of this number, taken in conjunction with the inclination and roughness of the roadway and whether the ventilation is ascensional or descensional, indicates the degree of mixing and movement of firedamp roof layers.
layering of firedamp	The formation of a layer of firedamp at the roof of a mine working and above the ventilating air current.
leakage	An unintentional diversion of ventilation air from its designed path.
leakage co-efficient	A measure of the leakiness of a ventilation duct.
leakage intake	A gate road ventilated by a controlled leakage of air from an intake airway.
marsh gas	See <i>firedamp</i> .
methane	1. A flammable hydrocarbon gas, CH ₄ , the principal constituent of firedamp. 2. See <i>firedamp</i> .
methane drainage	See <i>firedamp drainage</i> .
methanometer	An instrument to measure methane concentration.
mine fan	The main fan for the mine, normally situated at the surface.
mixed-flow fan	A fan in which the movement of the air is both axial and radial.
multi-stage fan	A fan having two or more impellers working in series.
naked light	Any light which is not so enclosed and protected as to preclude the ignition of an ambient firedamp-air mixture.
OPEN LIGHT	
natural air crossing	An air crossing in which the two airways are separated by rock in its natural state.
natural ventilation	The natural flow of air which occurs in mine workings, usually owing to differences in air density.
natural-ventilating pressure	(Abbr. n.v.p.) The ventilating pressure which produces natural ventilation.
noxious gas	A gas which is injurious to health.
open light	See <i>naked light</i> .
outburst (gas)	A sudden violent discharge of gas, of short duration, accompanied by the displacement of fine coal or rock (cf. <i>blower</i>).
overall fan efficiency	The ratio of the horsepower in the air to the horsepower absorbed by the driving motor of the fan.
overcast	1. An air crossing in which one airway is deflected to pass over the other. 2. The upper airway of an air crossing.
pressure chamber	An enclosed space arranged on the access side of a stopping, which seals off an area and is furnished with means of raising or lowering the air pressure within it.

Term	Definition
probe lamp	A modified flame safety lamp incorporating in the bonnet a nipple through which mine air drawn through a sampling probe can be delivered into the body of the lamp.
propeller fan	A fan having an impeller other than of the centrifugal type rotating in an orifice, the air flow into and out of the impeller not being confined by any casing.
radial-flow fan CENTRIFUGAL FAN	A fan in which the air leaves the impeller in a direction substantially at right angles to its axis.
radial ventilation	A ventilation system in which a number of downcast shafts arranged around the periphery of the working area are served by a common upcast shaft within the area, or vice versa. (Sometimes known as compound ventilation.)
re-circulation	The continuous circulation of all or some part of the same air in part of a mine ventilation system.
regulator	An adjustable opening in a door or other ventilating device used to control the ventilating air current.
regulator door	See <i>scale door</i> .
relighter flame safety lamp	A locked spirit-burning lamp fitted with an internal relighting device.
return (airway)	Any airway which carries the ventilating air outbye and out of the mine.
return air	Air travelling in a return.
reversing doors	The system of doors or shutters on or near a surface fan for reversing the direction of the air passing through the mine.
roof layer (firedamp)	A layer of firedamp under the roof of a mine working which may flow either with or against the ventilation.
rubbing surface	The surface area of a given length of airway.
safety lamp	A locked flame lamp or electric lamp which is so enclosed and protected as to preclude the ignition of an ambient firedamp-air mixture.
scale	To regulate the air current in a roadway.
scale door REGULATOR DOOR	A door which has an air regulator.
screen	See <i>brattice</i> .
screw-fan	See <i>axial-flow fan</i> .
seal	See <i>stopping</i> .
self rescuer	A small personal respirator which enables a wearer to escape from air contaminated by carbon monoxide.
separation door	See <i>air door</i> .
series ventilation	A system of ventilating a number of faces consecutively by the same air current.
shaft casing AIR LOCK	The structure enclosing the top of a shaft designed to prevent short circuiting of air into or out of the shaft.
sheets	See <i>brattice sheeting</i> .
show (of gas)	A concentration of flammable gas just sufficient to form a perceptible cap above the flame of a flame safety lamp.
single-inlet fan	A centrifugal fan in which the air enters the impeller at one side only.
split AIR SPLIT	<ol style="list-style-type: none"> 1. To divide the air current into separate circuits to ventilate more than one section of the mine. 2. Any division or branch of the ventilating current. 3. The workings ventilated by that branch.
spout	See <i>stenton</i> .

Term	Definition
standard air static pressure	Dry air under conditions of standard temperature and pressure. The difference, in consistent units, between the absolute pressure at a point, and the absolute pressure of the ambient atmosphere, being positive when the pressure at the point is above the ambient pressure, and negative when below.
stenton AIR SLIT, BREAK-THROUGH, CROSSCUT, CROSS-HOLE, SPOUT, THIRLING, THROUGHER	A connecting roadway between two adjacent roadways which may be used for ventilation purposes.
stink	See <i>gob stink</i> .
stithe	See <i>blackdamp</i> .
stopping SEAL	A barrier constructed of brickwork, debris or other material designed to prevent the passage of air or gas or to contain a fire or explosion.
stythe	See <i>blackdamp</i> .
suction blast	See <i>backlash</i> .
testing flame	The lowered flame used when testing for gas with a flame safety lamp.
theoretical fan depression	That depression which can be produced by a perfect fan.
thirling	See <i>stenton</i> .
througher	See <i>stenton</i> .
total pressure	The algebraic sum of the static pressure and velocity pressure at any particular point.
tracer gas	A gas introduced in small quantities into the main body of the air to determine either the air current or the leakage paths in a ventilation system.
trap door	See <i>air door</i> .
turbo-axial fan	An axial-flow fan with a turbine-rotor-type impeller.
undercast	1. An air crossing in which one airway is deflected to pass under the other. 2. The lower airway of an air crossing.
unit ventilation	A system of ventilation in which each working face is ventilated by a separate air current.
upcast shaft	A shaft through which air leaves the mine.
velocity pressure	The pressure-equivalent of the air velocity at any particular point. (This is always positive.)
ventilating pressure	The total pressure required to overcome the resistance to flow of the ventilating air.
ventilation surveying	Systematic observation of air pressure, quantity and quality throughout a mine or part of a mine, to allow a detailed analysis of the ventilation of the system.
venturi	Apparatus to induce a flow of air or gas in a duct by means of a jet of compressed air or water from a small nozzle in the duct.
volumetric efficiency	The ratio, expressed as a percentage, of the total volume of air usefully used in a mine to the total quantity of air circulated. It is usually taken to be the total quantity of air reaching the working faces, compared with the total quantity entering the mine.
waft	See <i>brush</i> (1).
waste drainage	The controlled leakage of air through a waste to ensure that large concentrations of mine gases do not accumulate in that waste.
water gauge	1. (Abbr. w.g.) A measure of ventilating pressure, expressed in terms of the height of a column of water. 2. An instrument to measure the ventilating pressure difference.
wind road	See <i>airway</i> .

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

If permission is granted, the terms may include royalty payments or a licensing agreement. Details and advice can be obtained from the Copyright Manager. Tel: 020 8996 7070.