BRITISH STANDARD

BS 3618-3: 1971

Glossary of

Mining terms —

Section 3: Boring and exploration

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

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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 3, "*Boring and exploration*", was one of the early publications in the BS 3618 series. In the normal process of periodical review it was seen that certain amendments 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.

The subject of soil mechanics is not covered by this standard and, for terms in that field, reference should be made to CP 2001, "*Site investigations*", and CP 2003, "*Earthworks*".

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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.

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Glossary

Term	Definition
air flushing	The circulation of air through the drilling apparatus during drilling to cool the bit and to remove the cuttings from the hole.
auger EARTH AUGER HAND AUGER	1. A tool, developed from the Archimedean screw, used for soil sampling or the drilling of shallow holes. 2. See also *Winning and working* section.
auger stem	See *drill stem*.
bailer	1. A tube, fitted with a valve at its base, which is lowered into a borehole to remove cuttings and water. 2. See also *Drainage* section.
beche	See definition of *fishing tools*.
bentonite	A special form of thixotropic clay used in the composition of drilling mud.
bevel-wall bit	A diamond coring bit with its inner walls tapered to house a split ring core lifter.
bit	The cutting tool of a drilling or boring appliance. NOTE See under the following types of bit: bevel-wall, bottom discharge, bull-nose, casing, casing shoe, chilled shot, chopping, concave, cross, cruciform, diamond, drag, face discharge, fir-tree, fishtail, hand-set, impregnated, non-core, pilot, plug, reaming, reaming shell, roller rock, rose, sintered, spudding, under reaming, wallscraper, wedge reaming, wedge rose.
boart	See definition of *diamond*.
borehole logging	The determination of the physical, electrical and radioactive properties of the rocks traversed by a borehole.
boring head	See *drill head*.
bort	See definition of *diamond*.
bortz	See definition of *diamond*.
bottom discharge bit	A type of diamond coring bit designed to prevent crosion of the core by the flushing water. The inner tube of the core barrel is extended to protect the core, and the flushing water after passing down the annular space between the inner and outer tubes, is discharged inside the bit near to the cutting face.
bracehead TILLER	A long handle used to turn the drill string in percussive drilling.
bull-nose bit	See *plug bit*.
bull wheel	A reel used in rope drilling to accommodate the boring rope by which the bit is suspended in the hole.
cable drilling	See *rope drilling*.
calf wheel	A reel used in rope drilling to accommodate the rope by which the casing is raised or lowered.
caliper	An instrument used in conjunction with a microlog which, when lowered down a borehole, measures and records the internal diameter throughout its depth.
calyx	See *sediment tube*.
calyx drilling	A method of rotary drilling using a toothed cutting bit or chilled shot.
carbon	See definition of *diamond*.

Term	Definition
casing FLUSH-COUPLED CASING FLUSH-JOINT CASING	Piping used to support the sides of a borehole. Flush-coupled casing is joined with a coupling which has the same outside diameter as the casing, but has two male threaded ends. Flush-joint casing has a male thread at one end and a female thread at the other; no coupling is used.
casing bit	A diamond-set or tungsten carbide tipped rotary bit designed to bore out an annulus slightly larger than the casing. It is withdrawn before the casing is inserted.
casing drive hammer DRIVE HAMMER MONKEY, *deprecated*	A weight used to drive casing down a borehole.
casing drive head DRIVE HEAD	A collar screwed to the top of the column of casing to prevent the casing from being damaged by the impact of the drive hammer.
casing drive shoe DRIVE SHOE	A hardened steel shoe screwed to the lower end of the casing to protect the casing when it is driven down a hole by percussive means.
casing jar hammer JAR HAMMER	A drive hammer used to extract casing.
casing shoe	A diamond-set rotary bit screwed to the end of the casing. It clears the way for the casing and is normally left in the borehole.
cathead	1. An auxiliary general purpose winch associated with a drilling rig. 2. See also *Shafts and associated equipment* section.
cavings	Rock fragments which fall from the sides of a borehole.
chilled shot bit	A flat-surfaced bit used with hardened steel shot to drill rock by a milling action.
chilled shot drilling	A method of rotary drilling in which chilled steel shot is used as the cutting medium.
chopping bit	A chisel-bit used in rotary drilling to break up dropped core or broken rock.
circulating fluid	The fluid, which may be water, mud or air, circulated through the drilling apparatus during drilling. Its chief functions are to remove the cuttings, to cool the bit, and in the case of mud to support the sides of the hole.
circulating pump MUD PUMP SLUSH PUMP	The pump used to circulate mud or water through the drilling column.
clamps	See *slips*.
clinometer INCLINOMETER, *deprecated*	An instrument used to determine the amount and direction of deviation of a borehole from the vertical.
collar	The mouth of a borehole.
collaring	The operation of starting to bore a hole.
concave bit	See *plug bit*.
conductor casing	See *standpipe*.
congo	See definition of *diamond*.
core	The cylindrical sample of rock bored out during core drilling.
core barrel	The cylindrical container which receives the core as it is drilled. (See also *double-tube, single-tube, split* and *wire line core barrels*.)

Term	Definition
core catcher	See *core lifter*.
core clip	See *core lifter*.
core drilling	A method of rotary drilling in which a core is recovered.
core lifter CORE SPRING CORE CATCHER, *deprecated* CORE CLIP, *deprecated*	A spring clip at the base of the core barrel which grips the core, enabling it to be broken off and brought out of the hole.
core picker	A cylinder with flat internal springs used to recover dropped core.
core shell	See *reaming shell*.
core spring	See *core lifter*.
counter flush boring REVERSED FLUSH BORING	A method of core drilling in which the circulating fluid passes down the borehole and returns up the inside of the rods, providing continuous recovery of the core.
cross bit CRUCIFORM BIT	A percussive bit which has four chisel edges arranged in a cross.
crown	That part of a bit which contains the cutting diamonds.
crown block	A pulley block mounted at the top of a derrick from which the travelling block is suspended.
cruciform bit	See *cross bit*.
dart	See definition of *fishing tools*.
deflection	The intentional alteration of the course of a borehole in directional drilling.
deflection wedge WHIPSTOCK, *deprecated*	A wedge-shaped tool inserted in a borehole to direct the bit along a prescribed course.
derrick	The framework over a borehole, used primarily to allow lengths of drill rod to be added to the drilling column.
deviation	The wandering of a borehole from its intended course.
diamond	A diamond of industrial grade used as the cutting element in drill bits: known variously as boart, bort, bortz, carbon, congo, etc.
diamond bit	A rotary bit using diamonds as the cutting media.
dip meter	An instrument used to record the amount and direction of the dip of strata exposed in the sides of a borehole.
directional drilling	1. Drilling in which the course of a borehole is controlled by deflection wedges or other means. The technique of directional drilling is used: a. To deflect a deviated borehole back on to course. b. To deflect a borehole off course, either to by-pass an obstruction in the hole or to take a second core. 2. The drilling of a borehole in a predetermined direction.
double-tube core barrel	A core barrel fitted with an inner tube to protect the core from erosion by the circulating fluid.
drag bit FISHTAIL BIT PILOT BIT	A rotary bit which has two or more cutting blades or wings with hard-faced cutting edges. (Various types are the two-wing, three-wing, fishtail and pilot bits.)
draw works HOIST	The winch used in rotary drilling to raise and lower the drilling column and casing.

Term	Definition
drill collar GUIDE ROD	A heavy drill rod attached to the top of the core barrel to minimize deviation of the hole and to increase the thrust on the bit at the start of the hole.
drill head SWIVEL HEAD BORING HEAD, *deprecated*	The assembly which applies the drilling pressure and rotation to the drill rods.
drill rods	Lengths of rod coupled together forming the drilling column, to the end of which the core barrel and/or bit are attached.
drill stem AUGER STEM, *deprecated*	A long rod used in rope drilling to increase the weight acting on the bit.
drill string	The string of tools commonly used in rope drilling, namely, rope socket, sinker bar, sliding jars, drill stem and drill bit.
drilling column	The column of drill rods to the end of which the core barrel and/or bit are attached.
drilling rate	The overall rate of advancement of the borehole.
drive hammer	See *casing drive hammer*.
drive head	1. See *casing drive head*. 2. See also *Transport* section.
drive rod	A splined rod in the drill head of a diamond drilling apparatus, by means of which pressure and rotation are applied to the column of drill rods.
drive shoe	See *casing drive shoe*.
earth auger	See *auger*.
face discharge bit	A type of diamond bit of similar design to that of the bottom discharge bit (q.v.). The flushing water passes down the annular space between the inner and outer tubes of the core barrel and is discharged through holes in the face of the bit without washing against the core.
fir-tree bit	A rotary bit in which a number of cutting edges are arranged behind a pilot bit to enlarge the hole.
fishing tackle	See fishing tools.
fishing tools FISHING TACKLE	Tools used to recover objects lost or stuck down a borehole, such as a length of rods remaining in the hole after the drill column has broken. (Examples of these tools are *beche, dart, recovery tap, spear, spring dart*.)
fishtail bit	See *drag bit*.
flush-coupled casing	See *casing*.
flush-joint casing	See *casing*.
four-cutter bit	See definition of *roller rock bit*.
gamma-ray log	The record obtained in borehole logging of the radio active emission of the rocks traversed by a borehole.
geochemical prospecting	A method of mineral exploration based on the systematic measurement of the chemical properties of rocks, soils, river sediments, waters, etc.
geophone	An instrument used for detecting the passage of sound waves through the strata.

Term	Definition
geophysical prospecting	The making and interpretation of certain physical measurements to obtain information on the sub-surface geological structures.
gravimeter	An instrument which measures variations in the density of underlying rocks.
grief stem	See *kelly*.
guide rod	See *drill collar*.
hand auger	See *auger*.
hand-set bit	A rotary bit in which diamonds are set in cavities drilled in the surface of the bit.
hoist	See *draw works*.
impregnated bit	A bit in which small whole diamonds and fragments of diamond are located at random throughout a sintered matrix.
inclinometer	See *clinometer*.
jar hammer	See *casing jar hammer*.
kelly GRIEF STEM, *deprecated*	The rod attached to the top of the drill column in rotary drilling. It passes through the rotary table and is turned by it, but is free to slide down through it as the borehole deepens.
laterolog	The record obtained in borehole logging of the electrical resistivity of the rocks traversed by a borehole.
lifting bail	The link by which the water swivel is suspended.
marsh funnel	A funnel used to measure the viscosity of drilling mud.
microlog	The record obtained in borehole logging of the porosity of the rocks traversed by a borehole.
monkey	See *casing drive hammer*.
mud balance	An instrument used to measure the density of drilling mud.
mud-flush drilling	A method of drilling in which a mud of controlled physical properties is used as the circulating fluid.
mud pump	See *circulating pump*.
neutron log	The record obtained in borehole logging of the combined hydrogen in the rocks traversed by a borehole.
non-core bit	See *plug bit*.
off-take ROD STAND SET-OUT	A length of boring rods unscrewed and detached at the top of a borehole.
overshot assembly	A device which is passed down the inside of the drill rods to extract the inner tube of a wire line core barrel and bring it to the surface.
penetration rate	The actual rate of penetration of drilling tools.
penetrometer	An instrument which automatically records the depth of drilling and the penetration rate.
percussive drilling	A method of drilling in which repeated blows are applied by the bit which is rotated intermittently.
pilot	See *reaming pilot*.
pilot bit	See *plug bit* and *drag bit*.

Term	Definition
plug bit BULL-NOSE BIT CONCAVE BIT NON-CORE BIT PILOT BIT	A non-coring diamond-set bit which can be in the form of a bull-nose bit, pilot bit or concave bit.
prove	To ascertain the character of the strata by boring or tunnelling.
rathole	A hole drilled alongside a borehole to accommodate the kelly during rod changing.
reaming bit	A rotary bit used to enlarge the diameter of a borehole.
reaming pilot PILOT	A smooth bar used to guide a reaming bit or casing bit in the hole.
reaming shell CORE SHELL, *deprecated*	A cutting cylinder, fitted between the bit and the core barrel or casing, used to maintain the diameter of the borehole. (The outside wall may be set with diamonds or hard metal.)
recovery tap	See definition of *fishing tools*.
reversed flush boring	See *counter flush boring*.
rig	The complete equipment used for drilling a borehole.
rocking beam	See *walking beam*.
rod stand	See *off-take*.
roller rock bit	A rotary bit fitted with two or more hardened steel or tungsten carbide tipped rollers of cylindrical or conical form. (Variously known as two-cone, three-cone, or four-cutter bits, etc.)
rope drilling CABLE DRILLING	A system of percussive drilling in which the drill string is suspended at the end of a long rope.
rose bit	A rotary bit used to mill through steel objects lost in a borehole.
rotary drilling	A method of drilling in which rotation and thrust are applied to the bit, producing a continuous cutting action.
rotary percussive drilling	See *Drilling and blasting* section.
rotary table	The mechanism used in some forms of rotary drilling to rotate the drilling column.
round trip	The operation of withdrawing the drill rods and bit, etc., from the hole, of extracting core, replacing rods and bit and resuming drilling.
sand reel	The reel on which the bailer rope is wound.
Schlumberger logs	Records obtained from instruments developed by the Schlumberger brothers for use in borehole logging. Such records are the gamma-ray log, laterolog, microlog and neutron log.
sediment tube SLUDGE BARREL CALYX, *deprecated*	A cylindrical container fitted above the core barrel to catch the coarse cuttings which tend to fall back to the bottom of the hole.
set-out	See *off-take*.
shearmeter	An instrument used to measure the gel strength of drilling mud.
single-tube core barrel	The simplest core barrel, having only a single cylindrical tube.
sinker bar	A heavy rod used to increase the snatching effect of the sliding jars in rope drilling.
sintered bit	A rotary bit in which diamonds are located in a predetermined pattern at the surface of a sintered matrix.

Term	Definition
sliding jars	A sliding joint used in rope drilling to apply a snatch to the bit at each upward stroke.
slips CLAMPS	A tool used at the mouth of a borehole to grip the drill rods or the casing, as these are being inserted or withdrawn.
sludge	Rock cuttings produced by the drill bit.
sludge barrel	See *sediment tube*.
slush pump	See *circulating pump*.
spear	See definition of *fishing tools*.
split core barrel	A type of core barrel which can be opened longitudinally to remove the core.
spring dart	See definition of *fishing tools*.
spudding	The operation, in rope drilling, of boring through the sub-soil at the start of a hole.
spudding bit	A heavy chisel-bit used in percussive drilling to drill through sub-soil.
standpipe CONDUCTOR CASING SURFACE CASING, *deprecated*	The first length of casing inserted in a borehole.
surface casing	See *standpipe*.
swivel head	See *drill head*.
tectonometer	An apparatus used on the surface to obtain knowledge of the structure of the underlying rocks.
three-cone bit	See definition of *roller rock bit*.
tiller	See *bracehead*.
travelling block	The pulley block which hangs below the crown block and is used for lifting the drilling column.
turbo drilling	A system of drilling in which the bit is directly driven by a turbine at the bottom of the hole.
two-cone bit	See definition of *roller rock bit*.
under reaming bit	An expanding bit used to enlarge the diameter of the hole below the casing to allow the casing to be lowered further down the borehole.
walking beam ROCKING BEAM, *deprecated*	The beam used to impart a reciprocating movement to the drilling column in percussive drilling.
wallscraper bit	A rotary bit used to enlarge the diameter of a borehole.
water swivel	The swivel coupling through which the circulating fluid enters the drilling column.
wedge reaming bit	A tapered or bull-nose rotary bit used to restart drilling after a deflection wedge has been fitted into a borehole.
wedge rose bit	A rotary bit used to mill off part of the top ring of a deflection wedge.
weight indicator	An instrument which records the weight of the column of rods suspended from the boring rope.
whipstock	See *deflection wedge*.
wire line core barrel	A double-tube core barrel, the inner tube of which can be removed to extract a core without withdrawing the drill rods.

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