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Mining — Vocabulary — Part 5: Drilling and blasting

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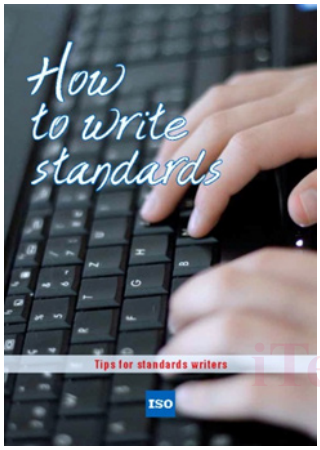

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This document was prepared by Technical Committee ISO/TC 82, *Mining*.

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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 5:

Drilling and blasting

1 ~~1~~Scope

This document specifies the drilling and blasting terms commonly used in mining. Only those terms that have a specific meaning in this field are included.

2 ~~2~~Normative references

This document does not contain normative references.

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3 ~~3~~Terms and definitions

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

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

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

3.1 ~~3.1~~ Rock drilling concepts

3.1.1
back-reaming
enlargement of a bore by pulling back a tool of a larger diameter than that previously used to form the bore

3.1.2
bench drilling
drilling (3.1.11) of *blast holes* (3.3.2) on *benches* (3.3.1) in open pit mines

3.1.3
blast hole drilling
drilling (3.1.11) of holes to be charged with *explosive* (3.25.1.4) for *blasting* (3.30.1.1)

3.1.4
consolidation drilling
drilling (3.1.11) of long holes in the front or at an angle of the drift direction to be injected with consolidation fluid

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EXAMPLE ~~*grout*~~*Grout* (3.15.4~~)~~).

3.1.5
coverage area
area that the rock drill can drill from one stationary position of the *rock drill rig* (3.8.15)

Note 1 to entry: The coverage area depends largely on the *boom* (3.13.11) configuration and if of the rock drill rig, and if there is a turn able superstructure.

Note 2 to entry: *Hole deviation* (3.4.8) is due to the *drill bit* (3.11.1) changing direction as a result of, for example, inhomogeneity in the rock or a bent *drill rod* (3.13.2) is bent. *Hole deviation* (3.4.8) can be minimised by sturdy *drill string* (3.13.1) support and proper guidance while *collaring* (3.3.3).

3.1.6
dimensional stone drilling
drilling (3.1.11) of holes for quarrying natural stone

3.1.7
drainage drilling
drilling (3.1.11) of drainage holes for methane or water

3.1.8
drifting
drilling (3.1.11), *blasting* (3.30.1.1) and excavating rock to create *transportation* (3.16.16) and access openings to ore bodies in an underground mining operation

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3.1.9
drill instruction
instruction for how *drilling* (3.1.11) should be carried out

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3.1.10
drillability
relative speed at which a material may be penetrated by a *drill bit* (3.11.1)

Note 1 to entry: High drillability denotes easy penetration at a fast rate.

~~[SOURCE: Dictionary of Mining, Mineral, & Related Terms, U.S. Bureau of Mines, 1996]~~

[SOURCE: Reference [2]]

3.1.11
drilling
process by which a borehole is produced in any geological formation by rotary, rotary percussive, percussive or thrust methods and in any predetermined direction in relation to the drill rig

[SOURCE: ISO 22475-1:2021, 3.1.5]

3.1.12
drilling for secondary breaking
drilling (3.1.11) of *blast holes* (3.3.2) in the boulders remaining after a blast

3.1.13
exploratory drilling
application of the mechanical engineering technology of deep *drilling* (3.1.11) to determine the profile of the formation and retrieve strata samples to obtain the relevant geological parameters

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[SOURCE: IWA 33-1:2019, 5.19]

3.1.14
face drilling
drilling (3.1.11) of *blast holes* (3.3.2) in the front wall at the end of a drift, rock *chamber* (3.22.6) or tunnel

3.1.15
fan drilling
long hole production drilling (3.1.17) where the holes are drilled in the same plane but at different angles, both left and right of vertical, to form a fan like array

3.1.16
line drilling
technique involving a single row of closely spaced, uncharged, small diameter holes drilled along the required excavation line, thereby providing a plane of weakness to which the primary blast can break

[SOURCE: BS 3618-6:1972]

3.1.17
long hole production drilling
drilling (3.1.11) of *blast holes* (3.3.2) of extended length to excavate ore

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3.1.18
probe drilling
drilling (3.1.11) of long holes with a *face drilling* (3.1.14) rig in the direction of the drift to examine the rock formation

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3.1.19
reaming
enlargement of a drill hole by using a larger drill or *blasting* (3.30.1.1)

Note 1 to entry: The term reaming also refers to widening a shaft, drift or tunnel.

3.1.20
shaft sinking drilling
drilling (3.1.11) of *blast holes* (3.3.2) for sinking a shaft

3.2 ~~3.2~~ Rock drilling technologies

3.2.1
boxhole boring
drilling (3.1.11) method where an opening upwards from a drift to a production room is achieved by boring it to its full diameter in a single pass with a machine designed specifically for the purpose

3.2.2
down-the-hole drilling
DTH
in-the-hole drilling
~~**DTH**~~
ITH
drilling (3.1.11) of holes using a *down-the-hole hammer rock drill* (3.10.3)

3.2.3

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percussive drilling
method of *drilling* (3.1.11) whereby repeated *blows* (3.30.1.15) are applied by the bit, which is repositioned by intermittent rotation

[SOURCE: BS 3618-6:1972]

3.2.4
raise boring
connection of two levels by *drilling* (3.1.11) a pilot hole down to the lower level, removing the *drill bit* (3.11.1) and replacing it by a reamer head which is then rotated and pulled back up towards the machine to create the raise

3.2.5
rotary drilling
method of *drilling* (3.1.11) in which rotation and thrust are applied to the bit, producing a continuous *cutting* (3.3.4) action

Note 1 to entry: The ground or rock at the bottom of the borehole is crushed or cut by pressure, shear or tensile stress produced by the different drilling ~~(3.1.11)~~ tools. The *collarings* (3.3.3) are periodically or continuously removed out of the bore hole.

Note 2 to entry: Drill bits can be of the roller or drag types.

[SOURCE: BS 3618-6:1972, modified — Notes to entry have been added.]

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3.2.6
rotary-percussive drilling
method of *drilling* (3.1.11) in which repeated *blows* (3.30.1.15) are applied to the *bit* (3.11.1) which is continually rotated under power

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Note 1 to entry: The piston is typically powered by either hydraulic fluid or compressed air. At the same time the drill bit ~~(3.11.1)~~ is rotated either continuously or intermittently.

Note 2 to entry: The *collarings* (3.3.3) can be continuously removed out of the borehole by a *flushing medium* (3.18.1), which is carried to the drilling ~~(3.1.11)~~ tool.

[SOURCE: BS 3618-6:1972, modified — Notes to entry have been added.]

3.2.7
tube drilling
drilling (3.1.11) method where a rotation *torque* (3.16.13) is transferred to the *drill bit* (3.11.1) through relatively thin wall tubes rather than rods, with a minimum-sized flushing fluid canal

3.3 ~~3.3~~ Bore holes, bench and cuttings

3.3.1
bench
part of the face of a large excavation which is not advanced as part of the round but as a separate operation

[SOURCE: BS 3618-6:1972]

3.3.2
blast hole
drilled hole for charging with *explosive* (3.25.1.4) for *blasting* ~~()~~(3.30.1.1) of rock

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3.3.3
collaring
operation of starting to bore a hole

[SOURCE: BS 3618-6:1972]

3.3.4
cutting
particles of geological formations formed in the borehole by the *collaring* (3.3.3) action of the *drilling* (3.1.11) tool

3.3.5
flanking hole
shothole (3.30.1.27) drilled at an acute angle to the coal face for the purpose of trimming it

[SOURCE: BS 3618-6:1972]

3.3.6
lifter
shothole (3.30.1.27) drilled at floor level

[SOURCE: BS 3618-6:1972]

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3.3.7
top hole
horizontal or upwardly inclined *shothole* (3.30.1.27) placed at the foot of a face

Note 1 to entry: Top holes are placed generally in quarries.

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[SOURCE: BS 3618-6:1972]

3.4 ~~3.4~~ Hole properties

3.4.1
alignment deviation
difference of actual and intended alignment of drilled hole

3.4.2
bolt hole
drilled hole where *rock bolts* (3.15.7) can be anchored

3.4.3
drill pattern
pattern of holes drilled to excavate a specified size of opening in mining and construction

3.4.4
hole depth
length of the hole in the vertical/horizontal direction

3.4.5
hole depth measurement
function for automatic measuring of drill depth

3.4.6

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