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Mining and earth-moving machinery — Rock drill rigs and rock reinforcement rigs —

Part 1: Vocabulary

Engins d'exploitation minière et de terrassement — Appareils de forage et de renfort de roches —
Partie 1: Vocabulaire

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Foreword

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This document was prepared by Technical Committee ISO/TC 82, *Mining*, in cooperation with Technical Committee ISO/TC 127, *Earth-moving machinery*.

A list of all parts in the ISO 18758 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

To ensure that communication in the domain of rock drill rigs is effective and that difficulties in understanding are minimized, it is essential that the various stakeholders use the same concepts and concept representations.

This document is of relevance, in particular, for the following stakeholder groups:

— machine manufacturers;

— mining companies;

— health and safety bodies (regulators, accident prevention organisations, market surveillance, etc.).

Others that can benefit from a standardised terminology are:

— machine operators;

— service providers, e.g. for maintenance;

— third party system and technology providers.

Mining and earth-moving machinery — Rock drill rigs and rock reinforcement rigs —

Part 1: Vocabulary

1 Scope

This document defines terms relating to rock drill rigs and rock reinforcement rigs, including their intended use, working methods, types, and main components.

It also provides (see Annex A) several classifications of rock drill rigs, based on intended use, mobility and type of operation.

The primary use of this document is in instruction handbooks for rock drill rigs and in marketing material. Safety related terminology is used in ISO 18758-2.

This document is not applicable to drill rigs for soil and rock mixture.

NOTE Documents covering vocabulary of related subjects are found in the bibliography.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

Refer to Clauses 4 to 20.

ISO and IEC maintain terminological 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/

4 Terms and definitions related to rock drilling intended use

4.1
blast hole drilling
drilling of holes to be charged with explosives for blasting

4.1.1
shaft sinking drilling
drilling of blast holes for sinking a shaft

4.1.2
face drilling
drilling of blast holes in the front wall at the end of a drift, rock chamber or tunnel

4.1.3
drilling for secondary breaking
drilling of blast holes in the boulders remaining after a blast

4.1.4
long hole production drilling
drilling of blast holes of extended length to excavate ore

4.1.4.1
fan drilling
long hole production drilling (4.1.4) 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

4.1.5
bench drilling
drilling of blast holes on benches in open pit mines

4.2
dimensional stone drilling
drilling of holes for quarrying natural stone

4.3
drainage drilling
drilling of drainage holes for methane or water

4.4
raise boring
connecting two levels by drilling a pilot hole down to the lower level, removing the *drill bit* (11.5) and replacing it by a reamer head which is then rotated and pulled back up towards the machine to create the raise

4.5
reaming
enlargement of a drill hole by using a larger drill or blasting

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

4.5.1
back-reaming
enlargement of a bore by pulling back a tool of larger diameter than that previously used to form the bore

5 Terms and definitions related to rock drilling methods

5.1
rock drilling
drilling
process by which a borehole is produced in rock by rotary, rotary percussive or percussive methods and in any predetermined direction in relation to the *rock drill rig* (7.1)

[SOURCE: ISO 22475-1:2006, 3.1.5, modified — The synonym “rock drilling” has been added. In the definition, “produced in any geological formation” has been replaced with “produced in rock” and the “thrust” methods have been deleted.]

5.1.1
percussive drilling
drilling method where the hole is produced by crushing the rock at the bottom of the drill-hole by striking it with the drilling tool and removing the cuttings out of the borehole

Note 1 to entry: Cuttings are defined in ISO 22475-1:2006, 3.3.7.

5.1.2
rotary-percussive drilling
drilling method where a piston is used to strike the bid either directly (down the hole hammer drills) or by percussive energy transmitted via a *drill string* (11.1)

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

Note 2 to entry: The cuttings can be continuously removed out of the borehole by a flushing medium, which is carried to the drilling tool.

5.1.3
down-the-hole drilling
in-the-hole drilling
DTH
ITH
drilling of holes using a *down-the-hole hammer rock drill* (10.2)

5.1.4
rotary drilling
drilling method where the drilling tool at the bottom of the borehole is rotated and, at the same time, a feed force is applied by a feed system

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 tools. The cuttings are periodically or continuously removed out of the bore hole.

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

5.1.5
core drilling
drilling method where a hollow centred *drill bit* (11.5) is used to produce cylindrical rock cores to investigate the properties of a rock mass

Note 1 to entry: Core drilling is performed with hard cutters, usually with annular diamond rebar, and pipes for the extraction of the drill core.

Note 2 to entry: Core drilling is performed from the surface to find orebodies and in underground mines to find out how the orebody extends.

Note 3 to entry: For terms related to core drilling see ISO 22475-1.

5.1.6
boxhole boring
<mining> drilling 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

5.1.7
tube drilling
drilling method where a rotation torque is transferred to the *drill bit* (11.5) through relatively thin wall tubes rather than rods, with a minimum-sized flushing fluid canal

6 Terms and definitions related to rock reinforcement methods

6.1
rock bolting
bolting
in mine workings, tunnels, or rock abutments, method of securing or strengthening closely jointed or highly fissured rocks by inserting and firmly anchoring *rock bolts* (13.1) oriented perpendicular to the rock face or mine opening

6.1.2
cable bolting
in long holes being drilled in rock, process of fixing cables with cement grout or chemical compounds to stabilize the rock mass

6.1.3
selective bolting
bolting of weak sections or loose rock

6.1.4
systematic bolting
bolting in a pre-determined pattern

6.2
meshing
netting
installing a mesh as rock support on ceiling or walls

6.3
grouting
input of material (which normally hardens) in joints and voids of the rock for sealing or reinforcement

Note 1 to entry: Examples of grouting materials are cement, resin and plastic.

7 Terms and definitions related to rock drill rig types

7.1
rock drill rig
machine for drilling holes in rock

Note 1 to entry: Rock drill rigs are designed to provide one or more of the rock drilling functions of Clause 4, using one or more of the rock drilling methods of Clause 5. They can be designed for use on the surface or underground or both. Rock drill rigs normally consist of a *carrier* (8.1) carrying one or more rock drills and the supporting systems needed to carry out the drilling.

Note 2 to entry: See Figures 1, 2 and 3.

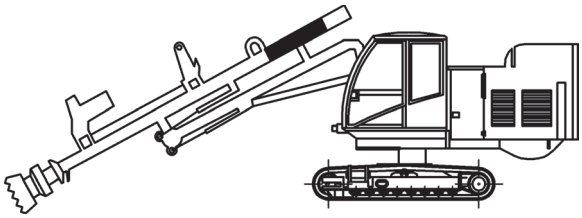

Figure 1 — Crawler based variable reach rock drill rig normally used to drill blast holes on the surface

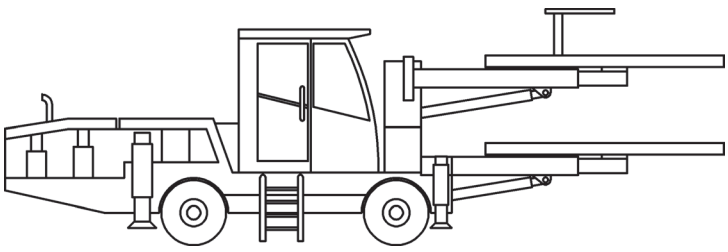

Figure 2 — Rubber-tyred multiple boom rock drill rig for drilling blast holes underground

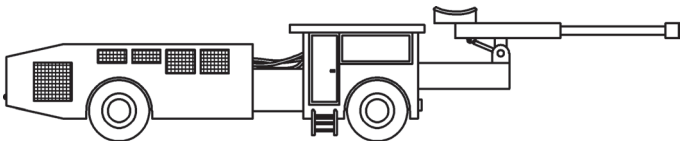

Figure 3 — Low profile rubber-tyred rock drill rig for drilling blast holes underground

7.2
rock reinforcement rig
rock drill rig (7.1) equipped for *bolting* (6.1), *meshing* (6.2) or *grouting* (6.3) or a combination of them

7.3
rock boring machine
rock drill rig (7.1) used to create an underground opening, drift or tunnel by mechanically boring out the rock

7.3.1
raise bore machine
RBM
rock drill rig (7.1) for *raise boring* (4.4)

7.4
raise climber
rock drill rig (7.1) on rails, designed for drilling and blasting vertical or near vertical shaft or raise

8 Terms and definitions related to general components and systems

8.1
carrier
machine that provides mobility for, and supports, the mass of a *rock drill rig* (7.1) or *rock reinforcement rig* (7.2)

8.2
hose reel
on a *rock drill rig* (7.1), drum-like structure around which the water hose is wrapped when *tramming* (14.11) the rig

8.3
power pack
unit consisting of a power source and a means of transmitting that power to one or more functions on a machine

Note 1 to entry: Note to entry: Typical power sources are diesel engine and electric motors. The typical output is hydraulic or pneumatic.

8.4
cable reel
on a *rock drill rig* (7.1), electrical cable drum used to store the power cable during *tramming* (14.11)

8.5
battery isolation switch
switch used to isolate the battery from the electrical circuit