

Nxburst® Overview

THE BETTER WAY TO BREAK ROCK AND CONCRETE

Nxburst® breaks Rock and Concrete with minimal flyrock, low vibration, reduced noise and requires only localized clearance of equipment and personnel.

HOW DOES IT WORK

The Nxburst® technology is based on a non-detonating chemical compound enclosed in a cartridge, which reacts very quickly when ignited to produce high volumes of harmless gas, mainly consisting of nitrogen, carbon dioxide and steam.

When the cartridge is sealed (by means of stemming) in a drill hole, the gas generated by the ignition of the propellant enters into the micro fractures created from the percussion drilling process and into the natural fractures and planes of weakness of the rock to produce a shearing of the rock or concrete, often called splitting.

HOW DO YOU USE IT

Nxburst® Cartridges are available in 13mm, 28mm, 34mm, 42mm and 60mm diameters. There are also two types available: *Standard* and *Underwater*. The procedure is as follows:

- Drill a hole
- Insert the cartridge
- Stem the hole with stone screenings/aggregate
- Clear the local area
- Connect up and fire

There are no expensive initiation systems or special tools required, just a fully charged shot firer and an Nxburst® Blasters Certificate. It is fast, simple and most importantly safe when handled correctly.

IS NXBURST® AN EXPLOSIVE

Nxburst® Cartridges have been determined by the United Nations Classification to be a hazard class UN 1.4S which is the same classification as small arms ammunition.

WILL IT BREAK ALL SIZES OF ROCK & CONCRETE

Nxburst® Cartridges are available in weights from 5grams to 500grams allowing operators to handle all sizes of jobs, from the smallest of rocks to large, steel reinforced concrete or bedrock. The choice of cartridge weight depends on the type of rock, its geology and the required result.

IS IT WATERPROOF

Nxburst® standard cartridges are water resistant and will therefore not be affected by casual water. For Harbour deepening projects etc, the Underwater Cartridges are recommended.

HOW IS THE CHARGE INITIATED

Nxburst® uses standard shot firing equipment as its initiation system. Simply connect the cartridge lead wires in series and connect them to a standard firing cable which is then attached to a standard shot exploder. The electric current heats up the bridgewire igniter to initiate the Nxburst® cartridge. The number of cartridges can be initiated in a single shot depends entirely on the capacity of the shot exploder.

NXBURST® ROCK AND CONCRETE BREAKING CARTRIDGES



Nxburst

ROCK BREAKING CARTRIDGES

Nxburst® Breaks Rock and Concrete with Minimal Vibration while Noise and Fly Rock 100% Controllable. Requires Only Localized Clearance of Equipment and Personnel

Nxburst® Rock and Concrete breaking cartridges provide safe and effective non-detonating rock breaking, boulder splitting and demolition capabilities. Nxburst® cartridges break rock and concrete with minimal vibration while noise and flyrock is 100% controllable.

They are available in 13mm, 28mm, 34mm, 42mm, and 60mm cartridges with charge weights from 5grams to 500grams.

Nxburst® Rock breaking cartridges are classified as "UN0432, Articles Pyrotechnic for Technical purposes, UN1.4S, UN0323, Cartridges, Power Device, UN1.4S and UN0276, Cartridges, Power Device, UN1.4C" and have been authorized for use in over 50 countries around the world, where they are widely used for civil and mining excavations.

Nxburst® Cartridges are manufactured by Nxco Mining Technologies (Pty) Ltd at their licensed factory in Pretoria, South Africa.

Nxburst® Rock Breaking Cartridges

NXBURST® 13MM ROCKPOPPER RANGE

Nxburst® RockPoppers are used for breaking small boulders up to 2 cubic meters in size. Applications include; Crusher Blockages, Oversize boulders, Scale Removal in tanks & Small demolition jobs. The range of cartridges are: 0513 and 1013.

The Nxburst® 13mm RockPopper cartridge requires a 16mm diameter drill hole which can be drilled with a hand held electric or petrol driven hammer drill.

NXBURST® 28MM CARTRIDGE RANGE

The Nxburst® 28mm cartridges are used for boulder breaking, armour stone splitting, medium size concrete demolition, dimension stone quarrying, swimming pool excavations and other in-situ rock breaking. The range of cartridges are: 2028, 4028, 6028, 8028, 10028 and 12028.

The Nxburst® 28mm cartridge requires a 32 – 34mm diameter hole which can be drilled with a handheld pneumatic drill using a 160cfm compressor.

NXBURST® 34MM CARTRIDGE RANGE

The Nxburst® 34mm cartridges are used for concrete demolition, tunnel and shaft enlargement, trenching and other in-situ rock excavations. The range of cartridges are: 2034, 4034, 6034, 8034, 10034, 12034, 14034, 16034, 18034 and 25034.

The Nxburst® 34mm cartridge requires a 38 – 42mm diameter hole which can be drilled with a handheld pneumatic drill using a 160 – 400 cfm compressor depending on the number of rockdrills to be used simultaneously, or by a small hydraulic rig.

NXBURST® 42MM CARTRIDGE RANGE

The Nxburst® 42mm cartridges were specially introduced to fit in with the mining industry drilling requirements. They are also ideal for concrete demolition, tunnel and shaft enlargement, trenching and other large in-situ rock excavations. The range of cartridges are: 6042, 8042, 12042, 18042 and 24042.

The Nxburst® 42mm cartridge requires a 45 - 51mm diameter hole which can be drilled with a handheld pneumatic drill using a 160 – 400 cfm compressor depending on the number of rockdrills to be used simultaneously, or by a small hydraulic rig.

NXBURST® 60MM CARTRIDGE RANGE

The Nxburst® 60mm cartridges can be used for large scale rock excavations, hard rock trenching, foundation excavation and other sensitive civil rock & concrete breaking applications. Used for concrete demolition, tunnel and shaft enlargement, trenching and other in-situ excavations. The range of cartridges are: 20060, 30060, 40060 and 50060.

The Nxburst® 60mm cartridge requires a 64 to 76mm diameter hole which can be drilled with a small hydraulic or pneumatic drilling rig.

NEW TECHNOLOGY & DEVELOPMENTS

- **Nxburst® Non-Electric Cartridges**

The whole range with the exception of the 13mm RockPoppers are available in a Non-electric format.

- **Nxburst® Self Stemming Cartridges**

Soon to be released will be the Self stemming range in 34, 42 and 60mm.

ENVIRONMENTAL CONSTRAINTS

The major environmental constraints which normally apply to rock breaking in environmentally sensitive areas are airblast overpressure, noise, ground vibration and flyrock limits.

AIRBLAST OVERPRESSURE

Airblast overpressure is caused by air transmitted vibrations or compressional waves produced by the rapid expansion of explosive gases and the rapid movement of the rock, resulting in the sudden displacement of the air surrounding the blast. Overpressure levels produced by Nxburst® are low when compared to conventional explosives and are of a shorter duration and less damaging frequency. This gives Nxburst® a major advantage over explosives in environmentally sensitive areas.

NOISE

Noise is the part of the overblast air pressure wave which falls within the audible frequency region of the human ear. The high frequency portion of the air pressure portion is not audible but can excite structures, such as windows, which in turn respond and produce secondary noise such as rattles. A well stemmed Nxburst® cartridge in granite will generally produce a noise level in the range of 80 to 85 dBL at 50 metres from the hole. Noise level can be attenuated by the use of conveyor belting, other matting or ground cover to cover the holes being fired.

GROUND VIBRATION

Ground borne vibrations from blasting can cause damage to buildings and infrastructure which are in the vicinity of the blast. The degree of vibration-induced damage caused by the blasting is dependant on the magnitude, frequency and duration of the vibration. The vibration signature produced by the combination of high frequency, low duration and low magnitude vibration waves enables Nxburst® to be used in close proximity to vibration sensitive sites where conventional blasting is prohibited or impractical. A Nxburst® specific vibration equation has been developed from monitored data collected from several Nxburst® rock breaking excavations in sensitive civil applications. These data have been collected by an independent group to produce a practical graph which relates vibration levels ("PPV") to charge weight and the distance from the shot at which the vibration is being measured.

FLYROCK

A Nxburst® cartridge produces optimal pressurization of the hole for a given burden and type of rock. By controlling the characteristics of the pressure pulse, the velocity and distance travelled by the dislodge rock can be limited. Controlled gas release from the Nxburst® cartridge, at relatively low pressure, results in a minimal quantity of low velocity flyrock, which is generally contained within 20 - 30 metres of the rock breaking event.

CRUSHER BLOCKAGES

Freeing a crusher from blockages caused by oversize rocks in the jaws or aperture, requires a minimum of energy and a large amount of flexibility. The Nxburst® 13mm cartridge is available in charge weights of 5g or 10grams and a 16mm hole can be drilled with a light weight electrical hand drill such as a Hilti TE25 Combi-hammer. The lightweight drill and small charge-weights allow the job to be done safely, quickly and with ergonomic ease. Using Nxburst® 13mm Rockpoppers to break rocks stuck in the jaws of a crusher ensures that there is no risk of damaging the crusher or any of the mine infrastructure. The Nxburst®13mm RockPopper splits the rock without flyrock, concussion effects or major noise.

DIMENSION STONE QUARRYING

Nxburst® is used to split granite for dimension stone in the quarrying industry. The benefits of using Nxburst® rather than black powder are that Nxburst®, in contrast to black powder, is water resistant and is not spark sensitive or impact sensitive, which makes the Nxburst® easier and safer to use, store and transport. Generally the 28mm range of Nxburst® cartridges is used in a 32mm hole.



NXBURST® 13MM ROCKPOPPER RANGE

NXBURST® 28MM CARTRIDGE RANGE

NXBURST® 34MM CARTRIDGE RANGE

NXBURST® 60MM CARTRIDGE RANGE