

**GLOBALY HARMONIZED SYSTEM
SAFETY DATA SHEET
(GHSSDS)**

NXBURST™ SAFETY CARTRIDGES

NXBURST GHS Safety Data Sheet
Jan-21-2014

NXBURST SDS 03
Version No: 4

Section 1 – PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

NXBURST™ SAFETY CARTRIDGES

PRODUCT USE

Rock / Concrete Breaking and excavation

PRODUCT APPEARANCE

- * Plastic tube of various lengths (75mm – 460mm)
- * External diameter of 12mm, 13mm, 28mm, 34mm, 42mm and 60mm
- * Each Cartridge contains between 2g to 500g of a 50/50 nitrocellulose and ammonium nitrate mixture
- * Example of identification of a specific cartridge: 10034
100 indicates 100g mixture weight and
34 indicates the external diameter of cartridge

MANUFACTURER / SUPPLIER

Company: NXCO Mining Technologies (PTY) Ltd

Physical Address: Building P5200
Gate 1
Necsa Industrial Park
Pelindaba
North West Province
South Africa

Telephone: +27 12 305 5237

Fax: +27 12 305 5247

Postal Address: PO Box 529
Broederstroom
240
South Africa

Emergency

Telephone No: +27 83 279 8695

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Section 2 – HAZARDS IDENTIFICATION

GHS Classification

- * Explosive
- * UN 0432 Articles Pyrotechnic, for Technical Purposes - Class 1.4S
- * UN 0323 Cartridge Power Device - Class 1.4S
- * UN 0276 Cartridge Power Device - Class 1.4C



EXPLOSIVES

Harmonized Tariff Schedule

Heading / Subheading	Stat. Suffix	Article Description	Unit of QTY	Rates of Duty		
				General	Special	%
3604		Fireworks, signaling flares, rain rockets, fog signals and other pyrotechnic articles:				
3604.90.00	0	Other	Kg	6.50%	Free (A, AU, CA, CL, E, IL, J, JO, MA, MX) 1.6% (SG)	40%

EMERGENCY OVERVIEW

HAZARD

- * Determined by NXCO Mining Technologies (Pty) Ltd.
- * H204
- * Fire or Projection Hazard



PRECAUTIONARY STATEMENTS

- * If misused or disposed of improperly, material could ignite and cause injury.

Prevention

- * Keep away from heat, spark and flames, combustibles, and sources of heat
- * Store in original packaging

Response

- * If Swallowed: No Risk – Humans unable to swallow cartridge
- * If exposed to open fire: Use water to control fire
- * Call emergency number: +27 83 279 8695

Storage

- * Store NXBURST Cartridges in original packaging
- * Keep away from heat, spark and flames, combustibles, and sources of heat
- * Store NXBURST in a well-ventilated, secure store or in a magazine that has been approved for explosive storage.
- * Do not store with acids, alkaline, oxidizing agents or reducing agents

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Section 3 – COMPOSITION / INFORMATION ON INGREDIENTS

- * Chemical specification of ammonium nitrate
- * Chemical specification of nitrocellulose propellant

Table 1. Chemical Specification of Ammonium Nitrate

	Item		Quantity
1	Ammonium Nitrate	NH ₄ NO ₃	99,5%
2	pH	-	4.5 – 6.0
3	Moisture	H ₂ O	0,1% max
4	Chloride	Cl	50 ppm max
5	Copper	Cu	10 ppm max
6	Iron	Fe	50 ppm max
7	Loose bulk density	-	0.7 – 0.76 kg/l
8	C Absorption	-	7.5% min
9	Particle size	> 2.8 mm	3 % max
10	Distribution	< 1.0 mm	1 % max
11	Total organic material	C	0.20%
12	UN Hazard classification	United Nations 1942 Oxidising Substance	



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Section 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Table 2. Chemical Specification of Nitrocellulose Propellant

	Characteristics	Specification Limits	Method	Classification of defects
1	Chemical properties		SLM 210	Minor
1.1	Nitrocellulose (Spec No. 06-7600-2020-075)	Remainder %		Minor
1.2	Dibutylphthalate (Spec No. 06-7600-2010-027)	3 to 6 %	**	Major
1.3	Diphenylamine (Spec No. 06-7600-2010-023)	0.8 % min, 1.4 % max	**	Minor
1.4	Calcium Carbonate (Spec No. 06-7600-2010-004)	0.5 % max	**	Minor
1.5	Potassium Nitrate (Spec No. 06-7600-2010-022)	0.4 to 1.0 %		Minor
1.6	Sodium Sulphate (Spec No. 06-7600-2010-075)	0.5 % max		Minor
1.7	Stannic Oxide (Addition optional) (Spec No. 06-7600-2010-077)	0.2 % max		Minor
1.8	Graphite (Spec No. 06-7600-2010-084)	0.1 to 0.4 %		Major
1.9	Water and volatile matter (2h at 100 °C)	0.75 to 1.25 %		Major
1.10	Dust and foreign matter	0.10 % max		Major
2	Methyl Violet stability at 120 °C			Major
2.1	Complete discolouration to salmon pink	Not within 45 min		
2.2	Emission of brown fumes	Not within 60 min		
2.3	Explosion	Not within 5 h		
3	Dimension of granules	Rolled	Unrolled	Minor
3.1	Smaller than 850 µm	97 % min	97 % min	
3.2	Between 850 and 400 µm	90 % min		
3.3	Smaller than 400 µm	7 % max		
3.4	Smaller than 355 µm	3 % max		
3.5	Between 850 and 355 µm		90 % max	
3.6	Smaller than 355 µm		7 % max	
3.7	Smaller than 212 µm		3 % max	
3.8	Voids and fissures	5 % max		Information only
4	Bulk Density	Reference to approximately 3 %		Minor
4.1	Approximate range	800 to 1000 g/dm ³	SPM 5.1	Minor

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Section 4 – FIRST AID MEASURES

HEALTH EFFECTS - CARTRIDGE STRUCTURE COMPROMISED

SWALLOWED

- * DO NOT induce vomiting.
- * Give water (or milk to rinse out mouth), then provide liquid slowly and as much as the casualty can comfortably drink.
- * DO NOT give liquid to a person showing the signs of being sleepy or becoming unconscious.
- * Transport to hospital or doctor without delay'.

EYE

- * If the propellant comes into contact with the eyes:
- * Immediately hold the eyes open and wash continuously for at least 15 minutes with fresh running water.
- * Ensure irrigation under the eyelids by occasionally lifting the upper and lower lids.
- * Transport to hospital or doctor without delay.
- * Skilled personnel should only undertake removal of contact lenses after an eye injury.

SKIN

- * If propellant comes into contact with the skin:
- * Immediately remove all contaminated clothing, including footwear (after rinsing with water)
- * Wash affected area thoroughly with water (and soap if available).
- * Seek medical attention in the event of irritation.

INHALED

- * If fumes or combustion products are inhaled:
- * Remove to fresh air.
- * Lay patient down. Keep warm and rested.
- * If breathing is shallow or has stopped, ensure clear airway and apply resuscitation.
- * Transport to hospital or doctor.

ADVICE TO DOCTORS

- * Treat symptomatically and as for exposure to nitro compounds.
- * Delayed Pulmonary Edema may result following exposure to nitrous oxides formed on thermal decompositions.

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Section 5 – FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- * Use & apply water

FIRE / EXPLOSION HAZARD

- * In the event of a fire, clear area of personnel and move upwind.
- * Propellants contained within the NXBURST cartridge will ignite when exposed to an open flame and will burn with rapidly increasing intensity of fire.
- * Heating of complete cartridges may cause expansion or decomposition of the propellant leading to violent rupture of the cartridge housing.
- * Heat affected cartridges remain hazardous.
- * Use only water to fight a nitrocellulose fire.
- * Combustion / Decomposition produces toxic fumes of oxides and nitrogen (NO_x), carbon monoxide (CO) and carbon dioxide (CO₂) if burned unconfined.

Section 6 – ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

In the event of propellant spilling from a NXBURST cartridge the following action should be taken:

- * Clear spill up immediately by sweeping components into non-sparking containers or barrels for disposal.
- * Mark the container properly.
- * Avoid breathing the powder / vapor and contact with the skin and eyes.
- * Wear impervious gloves and safety glasses.
- * Remove all ignition sources.
- * Use spark free tools when handling propellant.
- * Flush the area with large amounts of water.

Section 7 – HANDLING & STORAGE

STORAGE REQUIREMENTS

- * Store NXBURST cartridges in original containers.
- * Store NXBURST in a well-ventilated, secure store or in a magazine that has been approved for explosive storage.
- * Store at moderate temperatures.
- * Keep away from heat, spark and flames, combustibles, and sources of heat.
- * Keep containers securely sealed until ready for use.
- * Protect NXBURST packaging against physical damage.
- * Regularly check storage container and packaging.



STORAGE INCOMPATIBILITY

- * Avoid storage with acids, alkali's and oxidizing / reducing agents.

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Section 8 – PERSONAL PROTECTION

EYE

- * No special equipment required due to the physical packaging of the product
- * Safety Glasses



HANDS / FEET

- * No special equipment required due to the physical form of the product
- * Safety footwear or safety gumboots, e.g. Rubber



OTHER

- * Overalls
- * P.V.C apron
- * Barrier cream
- * Skin cleansing cream
- * Eye wash unit



RESPIRATOR

- * Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant.
- * Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.
- * Recommended filter: A1 – organic gasses and vapors with boiling point of 765°C.



Section 9 – PHYSICAL & CHEMICAL PROPERTIES

APPEARANCE

- * Plastic tube of various lengths 75 to 460 mm and external diameter 12, 13, 28, 34,42 and 60 mm.
- * Each Cartridge contains between 2 to 500 grams of a 50/50 nitrocellulose propellant and ammonium nitrate mixture. (10034 = 100 gram mixture and 34 mm diameter)

PHYSICAL PROPERTIES

- | | |
|---------------------------------------|------------------------------|
| * Boiling Point (°C): | Not Applicable |
| * Melting Point (°C): | Not Applicable |
| * Vapor Pressure (kPa): | Negligible |
| * Freezing Point (°C): | Not Applicable |
| * Specific Gravity of Propellant: | Approx-0.9 g/cm ³ |
| * Flash Point: | Not Applicable |
| * Lower Explosive Limit: | Not Applicable |
| * Upper Explosive Limit: | Not Applicable |
| * Solubility in Water ('Propellant,): | Immiscible |

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Section 10 – CHEMICAL STABILITY & REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Stability

- * Stable under normal conditions. Decomposition Temperature: Ammonium Nitrate will spontaneously decompose at 210°C (410°F).

Conditions to avoid

- * Keep away from open flames, hot surfaces and sources of ignition. Not expected to be sensitive to mechanical impact.

Hazardous decomposition products

- * The following toxic decomposition products may be released.
- * At temperatures above 210°C, decomposition may produce harmful fumes of oxides and nitrogen (NO), carbon monoxide (CO) and carbon dioxide (CO₂) if burned unconfined.

Section 11 – TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE

SWALLOWED

- * Not normally a hazard due to physical size of product.
- * The material has NOT been classified as “harmful by ingestion”.
- * This is because of the lack of corroborating animal or human evidence.
- * Present definitions of harmful or toxic substances are generally based on dosages which could cause mortality (death) rather than those producing morbidity (disease, ill-health).

EYE

- * Not normally a hazard due to physical form of product.
- * There is some evidence to suggest that this material can cause eye irritation and damage in some persons.
- * Eyes exposed to ammonium nitrate particulates, may be liable to irritation and burning.
- * These can remain in the eye causing inflammation lasting weeks, and can cause permanent dark dotted discoloration.

SKIN

- * Not normally a hazard due to physical form of product.
- * The material is not thought to produce adverse health effects or skin irritation following contact. Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.



INHALED

- * Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal use, may be damaging to the health of the individual.
- * Coughing, irritation of the upper airways and eye burning may occur.

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Section 11 – TOXICOLOGICAL INFORMATION (continued)

CHRONIC HEALTH EFFECTS

- * Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

TOXICITY AND IRRITATION

- * Not available. Refer to individual constituents.


Section 12 – ECOLOGICAL INFORMATION

- * Units / cartridges are water resistant
- * Any indication of AN seepage on the exterior of the cartridge requires the disposal of the cartridge in accordance with the disposal method as indicated in section 13: Disposal considerations

Section 13 – DISPOSAL CONSIDERATIONS


- * Recycle wherever possible or consult manufacturer for recycling options.
- * Damaged cartridges to be disposed by means of burning.
- * Consult the manufacturer for disposal instructions of the cartridges.
- * The packaging to be treated as explosive contaminated items.
- * Consult the manufacturer for disposal instructions or contact the local authorities in charge of explosives.

Section 14 – TRANSPORTATION INFORMATION

- * Dangerous Goods Class: 1.4 S 
- * UN Number: 0432 Articles Pyrotechnic for Technical Purposes
0323 Cartridge Power Device to be transported according to the local Regulations for Dangerous Goods
0276 Cartridge Power Device to be transported according to the local Regulations for Dangerous Goods

Section 15 – REGULATORY INFORMATION

REGULATIONS

- * NXBURST Cartridges are classified as explosives, by means of the United Nations classifications.
 - * NXBURST Cartridges are classified as UN Class 1.4 S for transportation of Dangerous Goods.
 - * Shipping name / description:
0432: Articles Pyrotechnic for Technical Purposes
0323: Cartridge Power Device to be transported according to the local regulations for Dangerous Goods
0276: Cartridge Power Device to be transported according to the local regulations for Dangerous Goods
 - * All regulations in accordance with the United Nations Standards for Transportation of Dangerous Goods.
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Section 16 – OTHER INFORMATION

SDS PREPARED IN ACCORDANCE WITH:

- * United Nations Regulations for Transportation of Dangerous Goods.
- * IATA Dangerous Goods Regulations
- * South African National Standards: SANS 10232.1 Transportation of Dangerous Goods
- * South African Explosive Act of 1956
- * South African Health and Safety Act of 1993
- * Conditions for the Acquisition, Transportation, Storage and use of Rock Breaking Cartridges (RBS) Version 1:
28/1/1: 24 October 2002

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