

Nonex SAFETY CARTRIDGE

Document Nr.: MSDSNONEX01SB



Material Safety Data Sheet (MSDS)

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1. IDENTIFICATION

SUPPLIER

Company: NXCO MINING TECHNOLOGIES (Pty) Ltd

Address: Gate 1 Pelindaba Industrial Complex
Pelindaba
South Africa

Telephone No.: +27 (0) 12 305 5237
Emergency Telephone No.: +27 (0) 83 279 8695

AUSTRALIA SUPPLIER

Company: BOULDER BUSTER AUSTRALIA

Address: 7838 Snowy River Way, Jindabyne, Australia

Telephone No.: +61 (0) 2 64571249
Emergency Telephone No.: +61 (0) 402 326 622 Deon Becker

PRODUCT DESIGNATION

Product Name: **Nonex Safety Cartridge**

UN Number. 0432 Articles Pyrotechnic: For Technical Purposes
and UN 0323 Cartridges Power Device

Dangerous Goods Class: 1.4S
Subsidiary Risk: None
Poisons Schedule Number: None-

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USE

A sensitive method of Rock and Concrete breaking

2. PERSONAL PROTECTIVE EQUIPMENT REQUIRED

RESPIRATORY PROTECTION:

- None required for normal handling

PROTECTIVE GLOVES:

- Wear suitable gloves when initiating and handling post ignition residuals.

EYE PROTECTION:

- Safety glasses or blast shield when initiating

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

- None required for normal handling. Protective clothing recommended when handling post ignition residuals

HYGENIC PRACTICES:

- Avoid breathing fumes from initiation
- Do not expose to extreme heat or open flames
- Do not smoke while handling product
- Do not eat or drink while handling product.
- Wash hand with soap and water after handling product

3. PHYSICAL AND CHEMICAL DESCRIPTION / PROPERTIES

APPEARANCE

Plastic tube of various lengths 75 to 460mm and external diameter 12, 13, 28, 34, 60mm

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)

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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
Flash Point:	Not Applicable
Lower Explosive Limit:	Not Applicable
Upper Explosive Limit:	Not Applicable
Solubility in Water ('Propellant,):	Immiscible

CHEMICAL SPECIFICATIONS

Table 1. Chemical Specification of Ammonium Nitrate.

Item		Quantity
Ammonium Nitrate	NHNO ₃	99,5%
pH	-	4.5 – 6.0
Moisture	H ₂ O	0,1% max
Chloride	Cl	50 ppm max
Copper	Cu	10 ppm max
Iron	Fe	50 ppm max
Loose bulk density	-	0.7 – 0.76 kg/l
C Absorption	-	7.5% min
Particle size	> 2.8 mm	3 % max
Distribution	< 1.0 mm	1 % max
Total organic material	C	0.2 %
UN Hazard classification	United Nations 1942 Oxidising Substance Class 5.1	

ppm = parts per million

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
1.4	Dibutylphthalate (Spec No. 06-7600-2010-027)	3 to 6 %	**	Major
1.5	Diphenylamine (Spec No. 06-7600-2010-023)	0.8 % min, 1.4 % max	**	Minor
1.6	Calcium Carbonate (Spec No. 06-7600-2010-004)	0.5 % max	**	Minor
1.7	Potassium Nitrate (Spec No. 06-7600-2010-022)	0.4 to 1.0 %		Minor
1.8	Sodium Sulphate (Spec	0.5 % max		Minor

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	No. 06-7600-2010-075)			
1.9	Stannic Oxide (Addition optional) (Spec No. 06-7600-2010-077)	0.2 % max		Minor
1.10	Graphite (Spec No. 06-7600-2010-084)	0.1 to 0.4 %		Major
1.11	Water and volatile matter (2h at 100 °C)	0.75 to 1.25 %		Major
1.12	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

4. HEALTH HAZARD INFORMATION

4.1 HEALTH EFFECTS - CARTRIDGE STRUCTURE UNCOMPROMISED

ACUTE

SWALLOWED

No Risk - Humans unable to swallow cartridge.

EYE

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No Risk - All irritating material is contained within the cartridge.

SKIN

No Risk - All irritating material is contained within the cartridge.

INHALED

No Risk - All irritating material is contained within the cartridge.

CHRONIC

No Risk apart from the explosive nature of the product

FIRST AID MEASURES

All potentially hazardous substances are sealed within the cartridge and as such do not pose a risk to users.

4.2 HEALTH EFFECTS - CARTRIDGE STRUCTURE COMPROMISED

ACUTE

SWALLOWED

Propellant is toxic if swallowed.
Considered an unlikely route of entry in commercial / industrial environments.

EYE

Propellant may be irritating to the eyes.

SKIN

Propellant may be irritating to the skin.
Repeated contact may lead to dermatitis.

INHALED

Dusty material may be irritating to the upper respiratory tract and lungs.
The decomposition vapors are extremely harmful to the upper respiratory tract and lungs.

CHRONIC

Principal routes of exposure are usually by skin contact and inhalation of dust.

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The principal hazard is related to the potential of fire / explosion and associated physical injury.

As with any chemical, ingestion, inhalation and prolonged or repeated skin contact should be avoided by good occupational work practice.

Short-term exposure by all routes is considered to be practically non-harmful, apart from the explosive nature of the propellant.

FIRST AID MEASURES

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:

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- 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.

5. SAFE HANDLING AND STORAGE

STORAGE REQUIREMENTS

- Store NONEX cartridge in original containers.
- Keep containers securely sealed until ready for use.
- No smoking, naked flames, heat or ignition source within 10 meters of storage location.
- Store NONEX cartridge in a well ventilated, secure store.
- Store in a cool dry place, do not store at temperatures above 65.5 °C (150 °F).
- Store in an area away from other materials.
- Protect NONEX cartridge Packaging against physical damage.
- Regularly check storage container and packaging.

STORAGE INCOMPATIBILITY

- Avoid storage with acids, alkalis and oxidizing / reducing agents.

6. FIREFIGHTING AND EXPLOSION HAZARD

In the event of a fire, clear area of personnel and move upwind. Propellants contained within the NONEX cartridge are extremely sensitive to heat and will burn with rapidly increasing intensity of fire.

Heating of 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.

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7. MINOR SPILLS OR ACCIDENTAL RELEASE MEASURES

In the event that propellant or black powder from a NONEX cartridge should be spilt the following action should be taken:

- Clear up all spills immediately.
- Avoid breathing the powder I 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.
- Sweep into non-sparking containers or barrels and place under water.
- Place spilled material in a clean container for disposal. Mark the container properly.
- Flush the area with large amounts of water.

8. STABILITY & REACTIVITY

Stability: Stable under normal conditions of transport and storage. Individual devices may initiate when subjected to fire, supersonic shock or high energy projectile impact. Multiple devices in close proximity with each other will not mass explode.

Conditions to avoid: Keep away from heat, flame, ignition sources and strong shock. Do not attempt to disassemble

Incompatibility (Materials to avoid): Corrosives, acids, organic solvents, organic compounds, phosphorous, sulphur, alkalines

Hazardous Decomposition or byproducts:

Nitrous Oxides (NO_x) at low temperatures, Nitrogen (N₂), Carbon Monoxide (CO)
Ammonia (NH₄) Carbon Dioxide (CO₂)

Hazardous Polymerization: Will not occur

Conditions to avoid: None related to polymerization

9. ECOLOGICAL INFORMATION

This product has not been tested for environmental compatibility however based on the ingredients utilized it is biodegradable but is acutely toxic to some marine organisms. Components are monitored by EPA. This product should generally not be placed in bodies of water or in sewers. When a hazardous materials incident requires that material be flushed into a sewer system or body of water (such as firefighting or spill cleanup), prompt notification of pertinent authorities must take place in order for remediation to begin. Failure to follow procedures for environmental notification and cleanup may result in sanctions from authorities.

10. DISPOSAL CONSIDERATION

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Waste disposal method: Only trained and qualified personnel should dispose of product

Disposal is required by a licensed propellant and or explosives disposals facility only and in accordance with all applicable local, state and federal regulations governing disposal of Class 1.4S explosives. Disposal of explosives should be carried out under the direct supervision of a qualified person. For industrial disposal, federal hazardous waste regulations allow open burning of explosive wastes in permitted facilities. Burn in the open isolated location, in small, shallow piles, that are not over one inch deep. Stay upwind. Do not breathe products of combustion. State or local regulations may be more stringent than federal regulations. For disposal of small quantities, contact state or local environment agencies for options. **DO NOT DISPOSE IN NORMAL TRASH RECEPTACLES**

Refer to Nonex Training Manual: Instruction for disposal of NoneX cartridges.

Partial Initiated Cartridge Identifications

Partial Initiated cartridges can be identified as follows:

- Most the top and the side of the cartridge are intact.
- The bottom yellow cap missing
- Propellant and Ammonium Nitrate residue located at the bottom of the hole.
- And an initiated Carrick Stat Fuse head inside of the casing.

This usually occurs when the cartridge is not confined properly in the blast hole due to poor or pre-conditioned ground.

Handling Partial Initiated Cartridge

Disposal of explosives should be carried out under the direct supervision of qualified persons trained in Explosives and accordance to the Safe Work Method Statement and NoneX Training Manual.

11. TRANSPORT INFORMATION

PROPER SHIPPING NAME: ARTICLES PYROTECHNIC FOR TECHNICAL PURPOSE, 1.4S, UN 0432, POWER DEVICE CARTRIDGE 1.4S, UN0323

DOT HAZARD CLASS: 1.4S PG II

UN /IDENTIFICATION NUMBER: 0432 Articles Pyrotechnic for Technical Purposes

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and UN 0323 Cartridge Power Device UN 0432

LABEL: NONEX UN0432 or UN0323 EXPLOSIVE 1.4S

HAZARD SYMBOLS:



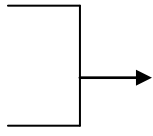
Note:

Clients are urged to contact their State Departments to confirm their transport requirements as the transportation regulation and requirements could vary from state to state

12. CONTACT POINTS

- EMERGENCY CONTACTS

Police Dial 000

Fire Brigade  Notify Police and Fire Brigade as to location, material, quantity, UN Number and Company contact

- COMPANY CONTACT:

NXCO MINING TECHNOLOGIES SOUTH AFRICA

Postal Address: P.O. Box 529
Broederstroom 0240
South Africa

Physical Address Gate1, Pelindaba Industrial Complex
Pelindaba, South Africa

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Emergency Telephone No.: +27 (0) 83 279 8695

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