

FRAGMENTOR™

GLOBALLY HARMONIZED SYSTEM SAFETY DATA SHEET (GHSSDS)

FRAGMENTOR™ SELF-STEMMING CARTRIDGES

FRAGMENTOR™ GHS Safety Data Sheet
30 August 2016

FRAGMENTOR™ SDS 01
Version No: 1

Section 1 – PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

NONEX™™ SAFETY CARTRIDGES

PRODUCT USE

Rock / Concrete Breaking and Excavation

PRODUCT APPEARANCE

- * Plastic tube of various lengths (227,5mm - 355mm)
- * External diameter of 43mm
- * Each Cartridge contains between 80g to 240g of a nitrocellulose and ammonium nitrate mixture
- * Example of identification of a specific cartridge: 12043
120 indicates approximately 120g mixture weight and
43 indicates the external diameter of cartridge

MANUFACTURER (Under licence)

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

AUSTRALIAN SUPPLIER

Company: Rock Breaking Solutions

Physical Address: 7838 Snow River Way
Jindabyne, NSW
2627

Telephone: 02 64571249

Emergency: 0402 326 622

Postal Address PO Box 495
Jindabyne
NSW
2627

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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



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.
- * H₂O₄
- * 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 NONEX™ Cartridges in original packaging.
- * Keep away from heat, spark and flames, combustibles, and sources of heat.
- * Store NONEX™ in a well-ventilated, secure store or in a magazine that has been approved for explosives 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 Class 5.1	



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.

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 NONEX™ 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.



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Section 6 – ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

In the event of propellant spilling from a NONEX™ 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 / vapour 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 NONEX™ cartridges in original containers.
- * Store NONEX™ 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 NONEX™ packaging against physical damage.
- * Regularly check storage container and packaging.



STORAGE INCOMPATIBILITY

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

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.



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Section 9 – PHYSICAL & CHEMICAL PROPERTIES

APPEARANCE

- * Plastic tube of various lengths 227,5 to 355 mm and external diameter 43 mm
- * Each Cartridge contains between 80 to 240 grams of nitrocellulose propellant and ammonium nitrate mixture. (12043 = approximately 120 gram mixture and 43 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 |

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 (Complete Cartridge).
- * 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.

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Section 11 – TOXICOLOGICAL INFORMATION (Continued)

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.
- * 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.



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
- * All regulations in accordance with the United Nations Standards for Transportation of Dangerous Goods.

Section 15 – REGULATORY INFORMATION

REGULATIONS

- * NONEX™ Cartridges are classified as explosives, by means of the United Nations classifications.
- * NONEX™ 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



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Section 15 – REGULATORY INFORMATION (Continued)

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 26 of 1956
- * South African Health and Safety Act 85 of 1993
- * Conditions for the Acquisition, Transportation, Storage and use of Rock Breaking Cartridges (RBS) Version 1: 28/1/1: 24 October 2002



Section 16 – OTHER INFORMATION

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