Material Safety Data Sheet

Infosafe No. LTSU5 Issue Date : June 2007 ISSUED by DYNONOB

Product Name : **NONEL® STARTER NONELECTRIC INITIATION SYSTEM**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	NONEL® STARTER NONELECTRIC INITIATION SYSTEM
Company Name	Dyno Nobel Asia Pacific Limited
Address	Level 20, 111 Pacific Highway North Sydney NSW 2060
Emergency Tel.	1800 098 836
Telephone/Fax Number	Tel: +61 2 9968 9000 Fax: +61 2 9964 0170
Recommended Use	Non-electric initiation of explosive charge.

2. HAZARDS IDENTIFICATION

Hazard Classification	DANGEROUS GOODS. NON-HAZARDOUS SUBSTANCE. Dangerous goods classification according to the Australian Dangerous Goods Code. Hazard classification according to the criteria of NOHSC.
Risk Phrase(s)	R3 Extreme risk of explosion by shock, friction, fire or other sources of ignition.
Safety Phrase(s)	S34 Avoid shock and friction. S35 This material and its container must be disposed of in a safe way.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Information on Composition

Chemical Entity	CAS	Proportion
Pentaerythritol tetranitrate (PETN)	78-11-5	0.2 g/cap
Hexogen	121-82-4	0.8 g/cap, No. 12 Strength
Hexogen	121-82-4	0.6 g/cap, No. 8 Strength
Aluminium Shell	7429-90-5	Balance
Nonel Tube Contents:		
Cyclotetramethylene Tetranitramine	2691-41-0	> 60%
Metal Powder	-	10.00 - 30.00%

4. FIRST AID MEASURES

Inhalation	If detonation fumes are inhaled remove to fresh air. If breathing stops, give artificial respiration. Seek medical attention.
Ingestion	Not a likely route of exposure. If the contents are swallowed, DO NOT INDUCE VOMITING. Get the patient rinse the mouth thoroughly and seek medical attention.
Skin	Not a likely route of exposure. If the contents are spilt on the skin, wash area of contact thoroughly with soap and water. Remove contaminated clothing immediately. Launder clothing before re-use. Seek medical attention if irritation persists.
Eye	Not a likely route of exposure. If the contents get in the eye, hold eye lids open and immediately flush with large amounts of fresh running water for several minutes. Seek medical attention.
First Aid Facilities	Eye wash and normal washroom facilities.
Advice to Doctor	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	For small fires use carbon dioxide, dry chemical or foam.
Hazards from Combustion Products	Under fire conditions this product may emit toxic and/or irritating fumes.

Specific Hazards	High explosive. Severe explosion hazard when exposed to heat. In case of all fires involving detonators, evacuate the area immediately. DO NOT FIGHT FIRES. Toxic fumes of lead will be produced if detonation occurs. Evacuate up wind of fire.
Hazchem Code	E
Precautions in connection with Fire	Fire-fighters should wear full protective clothing and self contained breathing apparatus (SCBA) operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures	Evacuate area of all non-essential personnel. Ensure no sources of ignition or heat. Ensure good ventilation. Contain the source and spread of the spill and ensure that the material does not enter any waterways or drains. Collect as much of the material as possible and place in clean, approved containers which are then labelled and sealed. Surplus or defective explosives must not be placed in any waterway, thrown away, discarded or placed with rubbish.

7. HANDLING AND STORAGE

Precautions for Safe Handling	DO NOT subject the product to impact, friction or heating. Do not drill into the explosive. Have appropriate fire extinguishers available in and near the storage area. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Wear appropriate protective equipment to prevent inhalation, skin and eye contact. Ensure a high level of personal hygiene is maintained when using this product. That is; always wash hands before eating, drinking, smoking or using the toilet.
Conditions for Safe Storage	Store in a cool, dry, well-ventilated area, out of direct sunlight and moisture. Store in labelled containers. Keep containers tightly closed. Store away from water and incompatible materials. Have appropriate fire extinguishers available in and near the storage area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards

Australian National Occupational Health And Safety Commission (NOHSC) Exposure Standards:

Substance	TWA		STEL		NOTE
	ppm	mg/m³	ppm	mg/m³	
Hexogen	-	1.5	-	-	Sk
Aluminium dust	-	10	-	-	

Biological Limit Values

No Biological limit available.

Other Exposure Information

TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.
STEL (Short Term Exposure Limit): The average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.
'Sk' Notice: Absorption through the skin may be a significant source of exposure. The exposure standard is invalidated if such contact should occur.

Engineering Controls

Extra ventilation when test firing.

Respiratory Protection

If engineering controls are not effective in controlling airborne exposure then respiratory protective equipment should be used suitable for protecting against airborne contaminants. Type of breathing protection required will vary according to individual circumstances. Expert advice may be required to make this decision. Reference should be made to Australian Standards AS/NZS 1715, Selection, Use and maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices.

Eye Protection	Safety glasses with side shields, goggles or full-face shield as appropriate recommended. Final choice of appropriate eye/face protection will vary according to individual circumstances i.e. methods of handling or engineering controls and according to risk assessments undertaken. Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.
Hand Protection	Wear gloves of impervious material. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.
Body Protection	Suitable work wear should be worn to protect personal clothing, eg cotton overalls buttoned at neck and wrist. When large quantities are handled the use of plastic aprons and rubber boots is recommended. Industrial clothing should conform to the specifications detailed in AS/NZS 2919: Industrial clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Varying length of 3-layer yellow Nonel tubing with a green bunch block containing a low strength UB detonator at one end and a green plastic tag at the other.
Odour	Not available
Melting Point	Not applicable
Boiling Point	Not applicable
Solubility in Water	Not applicable
Specific Gravity	Not applicable
pH Value	Not applicable
Vapour Pressure	Not applicable
Vapour Density (Air=1)	Not applicable
Flash Point	Not applicable
Auto-Ignition Temperature	Not applicable
Flammable Limits - Lower	Not applicable
Flammable Limits - Upper	Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal conditions.
Conditions to Avoid	Shock, friction, heat, direct sunlight, open flames or other sources of ignition and detonation.
Incompatible Materials	Not available
Hazardous Decomposition Products	Thermal decomposition may result in the release of toxic and/or irritating fumes.
Hazardous Polymerization	Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicology Information	No toxicity data is available for the actual product. Exposure to explosive charge material unlikely. The main hazard is possible exposure to lead fumes during test blasting.

Inhalation	Test firing of detonators in poorly ventilated areas can cause the presence of noxious fumes in the air.
Ingestion	No exposure to chemical hazards anticipated with normal handling procedures.
Skin	None anticipated with normal handling procedures. Accidental detonation of explosive devices can cause lacerations, punctures and/or traumatic injury. Severity of injuries is dependent on the number and the proximity of the detonators. Exposure to post-detonation reaction may cause irritation to skin resulting in redness and itching.
Eye	Not a likely source of exposure during normal industrial handling procedures. However injuries from accidental detonation of explosive devices can result in permanent eye damage or blindness. Particulates in eyes my cause irritation, redness, swelling itching and tearing.
Chronic Effects	During test blasting, exposure to lead fumes is possible. Long term exposure to low concentrations of lead may result in altered haemoglobin breakdown, kidney damage, anaemia and central and peripheral nervous system damage. Considered to be practically non-harmful (apart from explosive nature) as substances are contained within a metal tube.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Not available
Persistence / Degradability	Not available
Mobility	Not available
Environ. Protection	Avoid contaminating waterways.

13. DISPOSAL CONSIDERATIONS

Disposal Considerations	Destruction of explosives must be carried out by suitably qualified personnel. If necessary, the relevant statutory authorities must be notified. In all circumstances, detonation is the preferred method disposal. The explosives to be destroyed must be placed in direct contact with fresh priming charge in a hole and then adequately stemmed. No detonators are to be inserted into defective explosives. Personnel must be evacuated to a safe distance in accordance with relevant local regulations prior to initiation of the charge. NOTE: Detonations in loose or stony ground may be expected to cause fly rock.

14. TRANSPORT INFORMATION

Transport Information This material is classified as a Class 1 (Explosive) Dangerous Good according to The Australian Code for the Transport of Dangerous Goods by Road and Rail.
Dangerous goods of Class 1 (Explosive) are incompatible in a placard load with any of the following:

- Class 2.1, Flammable Gas
- Class 2.2, Non-flammable Non-toxic Gas
- Class 2.3, Toxic Gas
- Class 3, Flammable Liquid
- Class 4.1, Flammable Solid
- Class 4.2, Spontaneously Combustible Substance
- Class 4.3, Dangerous When Wet Substance
- Class 5.1, Oxidising Agent
- Class 5.2, Organic Peroxide
- Class 6, Toxic and Infectious Substances
- Class 7, Radioactive Substance
- Class 8, Corrosive
- Class 9 - Miscellaneous Dangerous Goods
- Fire risk substances

U.N. Number	0360
Proper Shipping Name	DETONATOR ASSEMBLIES, NON-ELECTRIC
DG Class	1.1B
Hazchem Code	E
Packaging Method	E105(a)
Packing Group	see 'Other information' (*)
EPG Number	EXP1
IERG Number	02
Other Information	(*) Unless specific provision to the contrary is made, the packagings used for explosives shall comply with at least the requirements for solids or liquids (as appropriate) of Packing Group II (medium danger). Further information related to packaging, IBCS and Unit loads for explosives can be obtained from Australian Explosives Code.

15. REGULATORY INFORMATION

Poisons Schedule	Not Scheduled
Hazard Category	Explosive

16. OTHER INFORMATION

Date of preparation or last revision of MSDS MSDS reviewed: June 2007

Contact Person/Point

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