

Infosafe No. LPWFO Issue Date : May 2007 ISSUED by DYNONOB

Product Name : NONEL® MS

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name NONEL® MS
Company Name Dyno Nobel Asia Pacific Limited
Address Level 20, 111 Pacific Highway North Sydney
NSW 2060
Emergency Tel. 1800 098 836
Telephone/Fax Tel: +61 2 9968 9000
Number Fax: +61 2 9964 0170
Recommended Use Detonators, non-electric

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.
S36/37 Wear suitable protective clothing and gloves.
S53 Avoid exposure - obtain special instructions before use.

Other Information This is a packaged product that will not result in exposure to the explosive material under normal conditions of use. Exposure concerns are primarily with post-detonation reaction products, particularly heavy metal compounds.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Information on Composition	Chemical Entity	CAS No.
	Pentaerythritol tetranitrate (PETN)	78-11-5
	Lead azide	13424-46-9
	Lead	7439-92-1
	Silicon	7440-21-3
	Selenium	7782-49-2
	Red Lead(Lead tetroxide)	1314-41-6
	Titanium dioxide	13463-67-7
	Barium chromate	10294-40-3
	Barium sulfate	7758-97-6
	Potassium Perchlorate	7778-74-7
	Silica(crystalline)	61790-53-2
	Molybdenum	7439-98-7
	Tungsten	7440-33-7
	Aluminium	7429-90-5
	Antimony	7440-36-0
	Cyclotetramethylene Tetranitramine(HMX)	2691-41-0

Other Information Not all delay periods contain perchlorate. Those that do contain between from about 4 to a maximum of about 60 mg perchlorate per detonator.

4. FIRST AID MEASURES

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing. Seek medical attention.

Ingestion If swallowed, DO NOT INDUCE VOMITING. Get the patient rinse the mouth thoroughly with water. Seek medical attention.

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Skin Wash affected area extremely thoroughly with soap and water. Remove contaminated clothing and wash before reuse or discard. If symptoms develop and persist, seek medical attention.

Eye If contact with the eye(s) occurs, wash with copious amounts of water holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. If symptoms persist seek medical attention.

First Aid Facilities Eye wash and normal washroom facilities.

Advice to Doctor Treat symptomatically.

5. FIRE FIGHTING MEASURES

Hazards from Combustion Products Burning material may produce toxic vapours.

Specific Hazards Can explode or detonate under fire conditions. Avoid extreme conditions of heat or shock. Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe, distant location. Allow fire to burn unless it can be fought remotely or with fixed extinguishing systems (sprinklers)

Hazchem Code E

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures Protect from all ignition sources. In case of fire evacuate all personnel to a safe distant area and allow to burn or fight fire remotely. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean approved container. Ensure that a complete account of product has been made and is verified. If loose explosive powder is spilled, such as from a broken detonator, only properly qualified and authorised personnel should be involved with handling and clean-up activities. Spilled explosive powder is extremely sensitive to initiation and may detonate. Dispose of waste according to federal, Environmental Protection Authority and state regulations. If the spillage enters the waterways contact the Environmental Protection Authority, or your local Waste Management Authority.

7. HANDLING AND STORAGE

Precautions for Safe Handling Only properly qualified and authorised personnel should handle and use explosives. Handle with great care. Unintended detonation of explosives or explosive devices can cause serious injury or death. Use in designated areas with adequate ventilation. Avoid sources of shock, friction, heat and ignition. Avoid contact with oxidising materials. Detonation in confined or unventilated areas may result in exposure to hazardous fumes or oxygen deficiency. Wear appropriate protection. Have emergency equipment (for spills, leaks, etc.) readily available. Label containers. Keep containers closed when not in use. Wear appropriate protective equipment to prevent inhalation, skin and eye contact. It is essential that all who come into contact with this material maintain high standards of personal hygiene ie. Washing hands prior to eating, drinking, smoking or using toilet facilities.

Conditions for Safe Storage Store in cool, dry, well-ventilated location. Only properly qualified and authorised personnel should handle and use explosives. Store in a well-ventilated, clean, dry magazine. Handle with care. Do not subject materials to impact, sparks or any form of heating. Have appropriate fire extinguishers available in and near the storage area. Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous. Reference should be made to AS 2187.1-1998 Explosives - Storage, transport and use - Storage. Reference should also be made to all State and Federal regulations.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards No exposure standards have been established for this material, however, the TWA National Occupational Health And Safety Commission (NOHSC) exposure standards for dust not otherwise specified is 10 mg/m³ and the exposure standards for ingredient are listed as following:

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

Substance	STEL		TWA	
	ppm	mg/m ³	ppm	mg/m ³
Lead, inorganic dusts & fumes (as Pb)	-	-	-	0.15
Selenium	-	-	-	0.1
Lead chromate (as Cr)	-	-	-	0.05
Molybdenum [insoluble compounds (as Mo)]	-	-	-	10
Tungsten, insoluble compounds (as W)	-	10	-	5
Aluminium (metal dust)(elemental)	-	-	-	10
Antimony & compounds (as Sb)	-	-	-	0.5

Biological Limit Values No biological limit allocated.

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.

Engineering Controls Use in a well ventilated area. Provide enhanced ventilation after use if in underground mines or other enclosed area.

Respiratory Protection Not required for conditions of use. Where exposure to fumes from blasting exists and ventilation is inadequate an approved respirator should be used. 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, in order to make any necessary changes for individual circumstances.

Eye Protection Safety glasses with side shields or chemical 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 Wear appropriate clothing including chemical resistant apron where clothing is likely to be contaminated. It is advisable that a local supplier of personal protective clothing is consulted regarding the choice of material.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Aluminum cylindrical shell with varying length and diameter of attached coloured plastic tubing. The detonator may be enclosed in a plastic housing, and an assembly may contain two detonators.

Odour No odour

Melting Point Not applicable

Boiling Point Not applicable

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Solubility in Water	Insoluble
Specific Gravity	Not applicable
Vapour Pressure	Not applicable
Vapour Density (Air=1)	Not applicable
Flash Point	Not applicable
Flammable Limits - Lower	Not applicable
Flammable Limits - Upper	Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact.
Conditions to Avoid	Keep away from heat, flame, ignition sources, impact, friction, electrostatic discharge and strong shock. Do not attempt to disassemble.
Incompatible Materials	Corrosive(acids and bases or alkalis)
Hazardous Decomposition Products	Toxic fumes may be generated as the product decomposes. Carbon monoxide, carbon dioxide, nitrous oxides, sulfides, chromates, lead, antimony and various oxides and complex oxides of metals.
Hazardous Polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Inhalation	Not a likely route of exposure.
Ingestion	No exposure to chemical hazards anticipated with normal handling procedures. Post-detonation reaction product residue is toxic by ingestion. Symptoms may include gastroenteritis with abdominal pain, nausea, vomiting and diarrhea.
Skin	No exposure to chemical hazards anticipated with normal handling procedures. Exposure to post-detonation reaction products may cause irritation.
Eye	No exposure to chemical hazards anticipated with normal handling procedures. Particulates in the eye may cause irritation, redness, swelling itching, pain and tearing.
Chronic Effects	Repeated inhalation or ingestion of post-detonation reaction products may lead to systemic effects such as respiratory tract irritation, ringing of the ears, dizziness, elevated blood pressure, blurred vision and tremours. Heavy metal(lead) poisoning can occur. Perchlorate can potentially inhibit iodide uptake by the thyroid and result in a decrease in thyroid hormone.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Not available
Persistence / Degradability	Not available
Mobility	Not available
Bioaccumulative Potential	Not available
Environ. Protection	Do not allow product to enter drains, waterways or sewers.

13. DISPOSAL CONSIDERATIONS



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Disposal Considerations Destruction of explosives must be carried out by suitably licensed personnel. If necessary, the relevant Statutory Authorities must be notified. In all circumstances, detonation is the preferred method of disposal. Detonator units to be destroyed must have the NONEL tubing cut off approximately 5 cm from the end of the detonator casing. Up to 100 detonator units may be destroyed at one time. The units are then to be placed in direct contact with a fresh priming charge in a hole (preferably a loaded blast hole) which is at least 0.6m deep and then adequately stemmed. Personnel must be evacuated to a safe distance in accordance with relevant local Regulations prior to initiation of the charge. The area is to be inspected for any plastic housings or unexploded detonators. The NONEL tubing must first be fired before disposal in landfill in accordance with local Regulations.

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 0029

Proper Shipping Name DETONATORS, NON-ELECTRIC

DG Class 1.1B

Hazchem Code E

Packing Group see 'Other information' (*)

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 Created: May 2007

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Product Name : **NONEL® MS**

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DISCLAIMER: The information and suggestions above concern explosive products which should only be dealt with by persons having appropriate technical skills, training and licences. The results depend to a large degree on the conditions under which the products are stored, transported and used.

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