JOHNEX explosives

MATERIALS SAFETY DATA
Non-Electric Detonators

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name: JOHNSON HI-TECH (AUSTRALIA) PTY LTD
Address: 103 Great Eastern Highway, Rivervale, WA, AUSTRALIA, 6103
Telephone: +61 8 6250 8200
Fax: +61 8 6250 8299
Emergency: 1800 014 100
Synonym(s): DETS NON-ELECTRIC DETONATORS LP/MS SERIES • JOHNEX NON-ELECTRIC DETONATORS LP/MS SERIES
Use(s): DETONATOR • INITIATING EXPLOSIVE CHARGE
MSDS Date: 20 Apr 2009

2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO ASCC CRITERIA.

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE.

UN No: 0360
DG Class: 1.1B
Subsidiary Risk(s): None Allocated
Packing Group: None Allocated
Hazchem Code: E
EPG: None Allocated

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	CAS No.	Content
ALUMINIUM	Al	7429-90-5	<1%
ANTIMONY	Sb	7440-36-0	<1%
CYCLOTRIMETHYLENE TRINITRAMINE (RDX)	C3-H6-N6-O6	121-82-4	<1%
LEAD TETROXIDE	O4-Pb3	1314-41-6	<1%
METAL AND PLASTIC COMPONENTS	Not Available	Not Available	>60%
CADMIUM CARBOHYDRAZIDE PERCHLORATE	Not Available	Not Available	<1%
CYCLOTETRAMETHYLENE TETRANITRAMINE (HMX)	C4-H8-N8-O8	2691-41-0	<1%
PENTAERYTHRITOL TETRANITRATE (PETN)	C5-H8-N4-O12	78-11-5	<1%
SILICON	Si	7440-21-3	<1%

4. FIRST AID MEASURES

EYE: Exposure is considered unlikely unless casing is damaged. Flush gently with running water. Seek medical attention if irritation develops.

SKIN: Exposure is considered unlikely unless casing is damaged. Gently flush affected areas with water and seek medical attention if irritation develops.

INHALATION: Exposure is considered unlikely unless casing is damaged. Flush gently with running water. Seek medical attention if irritation develops.

INGESTION: For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). Due to product form and application, ingestion is considered unlikely.

ADVICE TO DOCTOR: Treat symptomatically.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION: Evacuate area and contact emergency services. Exposure to heat may result in detonation, however effects are expected to be limited to the package. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Do not attempt to fight fire if other explosives are present. Use waterfog to cool unexploded cartridges.

EXTINGUISHING: DO NOT attempt to extinguish burning explosives. Evacuate area immediately. Notify trained emergency response personnel.

FLAMMABILITY: EXPLOSIVE. Will explode under specific conditions. May evolve toxic gases (carbon/ nitrogen oxides, hydrocarbons) when heated to decomposition. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights etc. when handling. **CAUTION:** Will explode if exposed to heat or with heavy impact.

HAZCHEM CODE: E

6. ACCIDENTAL RELEASE MEASURES

SPILLAGE: If cartridges are spilt or containers damaged Contact emergency services where appropriate. Clear area of all unprotected personnel. Contain spillage, then collect and place in suitable containers for disposal. Eliminate all ignition sources. **CAUTION:** Heating, impact or static charge may cause explosion.

7. STORAGE AND HANDLING

STORAGE: Store in a clean, dry magazine licensed for detonators. Detonators should not be stored with explosives. Remove from direct sunlight, incompatible materials and heat sources. Ensure the magazine is adequately placarded. Storage areas should have appropriate fire protection and ventilation systems.

HANDLING: Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

EXPOSURE STDS:

Ingredient	Reference	TWA		STEL	
		ppm	mg/m3	ppm	mg/m3
Aluminium (metal dust)	ASCC (AUS)	--	10	--	--
Antimony & compounds (as Sb)	ASCC (AUS)	--	0.5	--	--
Cyclonite	ASCC (AUS)	--	1.5	--	--
Silicon	ASCC (AUS)	--	10	--	--

LEAD TETROXIDE
ES-TWA: 0.15 mg/m3 (Lead, inorganic)

BIOLOGICAL LIMITS: No biological limit allocated.

ENGINEERING CONTROLS: Avoid inhalation. Use in well ventilated areas. When testing detonators, explosion proof mechanical extraction ventilation may be required in poorly ventilated areas.

PPE: Wear rubber or PVC gloves, coveralls and safety glasses. If entering

poorly ventilated or confined areas shortly after explosions wear self contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: GREEN PLASTIC SHOCK TUBE WITH ALUMINIUM DETONATOR SHELL AND COLOUR CODED J-HOOKS
SOLUBILITY (WATER): INSOLUBLE
ODOUR: ODOURLESS
SPECIFIC GRAVITY: NOT AVAILABLE
pH: NOT AVAILABLE
% VOLATILES: 0 %
VAPOUR PRESSURE: NOT AVAILABLE
FLAMMABILITY: EXPLOSIVE
VAPOUR DENSITY: NOT AVAILABLE
FLASH POINT: NOT AVAILABLE
BOILING POINT: NOT AVAILABLE
UPPER EXPLOSION LIMIT: NOT AVAILABLE
MELTING POINT: NOT AVAILABLE
LOWER EXPLOSION LIMIT: NOT AVAILABLE
EVAPORATION RATE: NOT AVAILABLE
DECOMPOSITION TEMPERATURE: > 65°C

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY : Stable under recommended conditions of storage.

CONDITIONS TO AVOID: Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.

MATERIAL TO AVOID: May detonate if heated strongly or exposed to severe shock. Due to enclosed form, reaction with other materials is unlikely, however avoid contact with acids (eg. nitric acid), metal powders, combustibles and oxidisers. Also incompatible with alkalis (eg. hydroxides).

HAZARDOUS DECOMPOSITION PRODUCTS: May evolve toxic gases (carbon/ nitrogen oxides, hydrocarbons) when heated to decomposition.

HAZARDOUS REACTIONS: Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

HEALTH HAZARD SUMMARY: Explosive. Due to product encapsulation, contact with contents is not anticipated with normal use. Avoid dust/fume inhalation after detonation. Nitrates may react with organic amines in the body to form carcinogenic nitrosamines. WARNING: May explode with shock, heat or friction.

EYE: Due to product form, exposure can only occur during detonation. Serious eye damage may result from explosive fragments.

INHALATION: Due to product form, an inhalation hazard is not anticipated with normal use. However, the testing of detonators in poorly ventilated areas may result in the generation of toxic fumes.

SKIN: Due to product form, exposure can only occur during detonation. Serious damage may result from explosive fragments.

INGESTION: Ingestion is considered unlikely due to product form. However, ingestion of contents of the enclosed product may result in gastrointestinal irritation, nausea, headache, dizziness and diarrhoea.

TOXICITY DATA:

ANTIMONY (7440-36-0)
LCLo (Inhalation): 50 mg/m3/7 hours/52 weeks intermittently (rat)
LD50 (Ingestion): 7000 mg/kg (rat)
LD50 (Intraperitoneal): 90 mg/kg (mouse)

CYCLOTRIMETHYLENE TRINITRAMINE (RDX) (121-82-4)
LD50 (Ingestion): 59 mg/kg (mouse)
LD50 (Intraperitoneal): 10 mg/kg (rat)
LD50 (Intravenous): 19 mg/kg (mouse)
LDLo (Ingestion): 100 mg/kg (cat)
TDLo (Ingestion): 85 mg/kg (child)

LEAD TETROXIDE (1314-41-6)
Health Surveillance: Required [NOHSC:1012(1994)]
LD50 (Intraperitoneal): 220 mg/kg (guine pig)
LDLo (Ingestion): 1000 mg/kg (guinea pig)

CYCLOTETRAMETHYLENE TETRANITRAMINE (HMX) (2691-41-0)
LD50 (Ingestion): 50 mg/kg (rabbit)
LD50 (Intravenous): 10 mg/kg (mouse)
LD50 (Skin): 630 mg/kg (rabbit)
LDLo (Intravenous): 40 mg/kg (dog)
TDLo (Ingestion): 153 mg/kg/22 weeks - intermittent (rat)

PENTAERYTHRITOL TETRANITRATE (PETN) (78-11-5)
LD50 (Ingestion): 35.5 g/kg (rat)
LDLo (Ingestion): 7 g/kg (mouse)
TDLo (Ingestion): 1669 mg/kg (man) SILICON (7440-21-3)
LD50 (Ingestion): 3160 mg/kg (rat)
LDLo (Intraperitoneal): 500 mg/kg (rat)

12. ECOLOGICAL INFORMATION

ENVIRONMENT: Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Do not dispose of this product. Small quantities of damaged or deteriorated material may be destroyed by inclusion in a blast hole containing good explosives (licensed personnel). Detonators should not be inserted into defective explosives. For larger amounts contact the manufacturer for additional information.

LEGISLATION: Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

Transport: AIR TRANSPORT PROHIBITED under the international Air Transport Association (IATA) Dangerous Goods Regulations for transport by air passenger aircraft and cargo aircraft.

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

Shipping Name : DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting
UN No: 0360
DG Class: 1.1B
Subsidiary Risk(s): None Allocated
Packing Group: None Allocated
Hazchem Code: E
EPG: None Allocated

IATA
Shipping Name: None Allocated
UN No: None Allocated
DG Class: None Allocated
Subsidiary Risk(s): None Allocated
Packing Group: None Allocated

IMDG
Shipping Name: DETONATOR ASSEMBLIES, NON-ELECTRIC for blasting

UN No: 0360
DG Class: 1.1B
Subsidiary Risk(s): None Allocated
Packing Group: None Allocated

15. REGULATORY INFORMATION

POISON SCHEDULE: A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).

AICS: All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

PRODUCT DESCRIPTION: A detonator assembly consist of a length of plastic shock tube with an aluminium shell at one end. The other end of the shock tube has a plastic J-hook connector. The inside of the shock tube is coated with aluminium and HMX powder. The detonator has a RDX charge, as well as a pyrotechnic delay element.

EXPLOSIVES & BLASTING AGENTS: Refer to Local State and Federal legislation that specifically relates to the use of Explosives. Users of products described in this MSDS report are advised to ensure familiarity and compliance with the appropriate legal requirements (eg. Regulations) prior to the use of this product. Where any further information is required, users may contact their local authority in Explosives and Dangerous Goods.

EXPLOSIONS: Fires involving explosives or explosive mixtures may undergo further explosions and rapid propagation. Police and emergency personnel should be notified immediately. Evacuate individuals to a safe sheltered area at least 800 metres away. If possible remove vehicles and further heat and ignition sources from the area. Do not return to areas until at least one hour after fire and explosions have ceased.

EXPLOSIONS: For further information please refer to Australian Standard 1216, for classification of explosives and Local and Federal Explosive and Dangerous Goods legislation (Act and Regulations).

EXPLOSIVES - BURNING SAFETY: (Note: disposal in a blast with fresh explosives may be preferable to burning).

(a) Make a sawdust (or newspaper) trail 450mm wide and approx 20mm deep in the direction of the wind. The trail should be 2m longer than necessary.

(b) Place the cartridges on the sawdust (or paper), they may be touching, but not piled on top of each other

(c) Individual trails should be no closer than 2m and should not contain more than 12kgs of explosives.

(d) Trails should be side by side, not in a line. No more than 4 should be set up at one time.

(e) Remove explosives not being burnt, to at least 300m away, unless the material can be stored behind something substantial.

(f) Thoroughly wet the trail with kerosene or diesel (never petrol or any other highly flammable liquid). Use at least 2L of fuel per 10m of trail.

(g) Light the trail from a long rolled paper wick, place down wind and contact the 2m of trail which is not covered by explosives. The flame should blow away from the unburned explosives otherwise preheating and detonation may occur.

(g) Use a plastic igniter if available instead of paper. Coil one end into the sawdust or under the paper and light the other end from a minimum distance of 7m away from the trail.

(h) Move away at least 300m. Do not return for a period of at least 30mins after burning has finished.

(j) If the fire goes out, do not approach for at least 15mins. Do not add kerosene or diesel oil unless certain that the flame is completely extinguished.

(k) Bury the residue as it is poisonous to livestock.

ABBREVIATIONS:
ADB - Air-Dry Basis.
BEI - Biological Exposure Indice(s)
CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.
CNS - Central Nervous System.
EINECS - European INventory of Existing Commercial chemical Substances.
IARC - International Agency for Research on Cancer.
M - moles per litre, a unit of concentration.
mg/m3 - Milligrams per cubic metre.
NOS - Not Otherwise Specified.
NTP - National Toxicology Program.
OSHA - Occupational Safety and Health Administration.
pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm - Parts Per Million.
RTECS - Registry of Toxic Effects of Chemical Substances.
TWA/ES - Time Weighted Average or Exposure Standard.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a MSDS report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this MSDS report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.