

# SAFETY DATA SHEET



Revision date: 15-Mar-2023

Revision Number 9

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

### Product identifier

**Product Name** EXEL DETONATORS (1.1B PACKAGING)

**Product Code(s)** 000023037401

### Other means of identification

**Proper shipping name** DETONATOR ASSEMBLIES, NON-ELECTRIC

**UN number** 0360

**Pure substance/mixture** Mixture

### Recommended use of the chemical and restrictions on use

**Recommended use** Initiating system for explosive charges. Restricted to professional users.

**Uses advised against** No information available

### Supplier

Orica Australia Pty Ltd  
ABN: 99 004 117 828  
1 Nicholson Street  
Melbourne 3000  
Australia

Telephone Number: +61 3 9665 7111

Facsimile: +61 3 9665 7937

### Emergency telephone number

Emergency telephone number **AUSTRALIA: 1 800 033 111 (ALL HOURS)**  
**INTERNATIONAL AUSTRALIA: +61 3 9663 2130 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

## 2. HAZARDS IDENTIFICATION

### GHS Classification

Classified as dangerous goods in accordance with the Australian Code for the Transport of Explosives by Road and Rail.

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

**Explosives**

Division 1.1 Category B

### **SIGNAL WORD**

Danger

**Label elements**

Explosive

**Hazard statements**

H201 - Explosive; mass explosion hazard

**Precautionary Statements - Prevention**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

Keep only in original packaging

Ground and bond container and receiving equipment

Do not subject to grinding/shock/friction

Wear protective gloves / protective clothing / eye protection / face protection

In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives

**Precautionary Statements - Storage**

Store in accordance with:

AS2187.1 in a well ventilated magazine.

**Precautionary Statements - Disposal**

Refer to manufacturer/supplier for information on disposal/recovery/recycling

**Other hazards which do not result in classification****Poisons Schedule (SUSMP)** None allocated**3. COMPOSITION/INFORMATION ON INGREDIENTS****Mixture**

Chemical name	CAS No.	Weight-%
Pentaerythritol tetranitrate (PETN)	78-11-5	<1%
Aluminium	7429-90-5	<1%
Cyclotetramethylenetetranitramine (HMX)	2691-41-0	<0.3%
Lead azide	13424-46-9	<0.3%
Metal and plastic components and other non-hazardous components	-	to 100%

**Additional information**

The detonator assemblies consist of a length of plastic signal tube with an aluminium tube (detonator) at one end or both ends. The detonator may be enclosed in a plastic connecting piece. The other end of the plastic tubing has a plastic connector which may also enclose a detonator. The plastic tubing is coiled and may be coiled on a reel. The signal tube has an internal dusting of HMX and aluminium powder. The detonator has a lead azide and PETN charge. It also contains a pyrotechnic delay element.

**4. FIRST AID MEASURES****Description of first aid measures****General advice**

For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. Take a copy of the Safety Data Sheet when going for medical treatment.

**Inhalation**

In case of inhalation of blasting fumes: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, (trained personnel should) give oxygen. Call a physician if symptoms occur.

<b>Eye contact</b>	Not an expected route of exposure. Get medical attention if symptoms occur.
<b>Skin contact</b>	Not an expected route of exposure. If skin irritation or rash occurs: Get medical advice/attention.
<b>Ingestion</b>	Get immediate medical advice/attention.
<b>Self-protection of the first aider</b>	Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

**Most important symptoms and effects, both acute and delayed**

<b>Symptoms</b>	None known.
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**Indication of any immediate medical attention and special treatment needed**

<b>Note to physicians</b>	Treat symptomatically. Detonator assemblies are explosive - handle with care. Shrapnel from detonation may cause burns, wounds and bruises. Explosive material containing lead. Long term exposure to detonation fumes may result in lead poisoning.
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**5. FIRE FIGHTING MEASURES****Suitable Extinguishing Media**

<b>Suitable Extinguishing Media</b>	Do not fight fires involving explosives.
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**Unsuitable extinguishing media****Specific hazards arising from the chemical**

<b>Specific hazards arising from the chemical</b>	Explosive. May be ignited by heat, sparks or flames. Avoid stray currents. Risk of explosion by shock or heating under confinement. May explode from friction, heat or contamination. Thermal decomposition can lead to release of irritating and toxic gases and vapors.
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<b>Hazardous combustion products</b>	Carbon oxides. Nitrogen oxides. Lead oxides. Lead fume. Aluminium oxides.
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**Special protective actions for fire-fighters**

<b>Special protective equipment for fire-fighters</b>	In the case of a small fire, if actual explosive is not burning, carefully remove as much explosive as possible to a safe distance. However, if explosive is burning, evacuate area immediately and allow to burn. DO NOT fight fire. A major fire may involve a risk of explosion. An adjacent detonation may also involve the risk of explosion. Mass explosion hazard. Severe detonation hazard when exposed to heat.
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<b>Hazchem code</b>	E
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**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, protective equipment and emergency procedures**

<b>Personal precautions</b>	Evacuate personnel to safe areas. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not subject to grinding/shock/friction. Use personal protective equipment as required.
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<b>Other information</b>	Refer to protective measures listed in Sections 7 and 8.
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In the case of a transport accident notify the Police, Regulatory Authorities and Orica Australia Pty Ltd (Telephone: 1800 033 111 -- 24 hour service) and/or Orica New Zealand Ltd (Telephone: 0800 734 607 -- 24 hour service) or Orica International (Telephone: +61

3 9663 2130 -- 24 hour service Australia).

**For emergency responders** Explosive material. Remove all sources of ignition. Use personal protection recommended in Section 8.

#### **Environmental precautions**

**Environmental precautions** Keep out of waterways.

#### **Methods and material for containment and cleaning up**

**Methods for containment** Prevent further leakage or spillage if safe to do so. Keep out of drains, sewers, ditches and waterways.

**Methods for cleaning up** Handle with care. Use non-sparking tools. Ground and bond containers when transferring material. Pick up and transfer to properly labelled containers. Avoid contamination with other substances. Keep in suitable, closed containers for disposal.

### **7. HANDLING AND STORAGE**

#### **Precautions for safe handling**

**Advice on safe handling** Handle with care. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep out of reach of children. Take precautionary measures against static discharges. Do not allow radio transmitters near electric detonators. Do NOT subject the material to impact, friction between hard surfaces nor to any form of heating.

**General hygiene considerations** Wash hands before breaks and after work. When using do not eat, drink or smoke.

#### **Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Store material in a well ventilated magazine suitably licensed for the explosives hazard classification. Do not store with other explosives products that have an incompatible explosives hazard classification (for example detonators must not be stored with blasting/high explosives). Store in accordance with the particular national regulations. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Store in a cool, dry area away from potential sources of heat, open flames, sunlight or other chemicals. Store away from other materials. Protect from physical damage. Keep/store only in original container. Protect from moisture.

**Incompatible materials** Incompatible with combustible materials. Incompatible with oxidizing agents.

**Poisons Schedule (SUSMP)** None allocated

### **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

#### **Control parameters**

**Exposure Limits** No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for constituent(s):

Lead, inorganic dusts & fumes (as Pb): 8hr TWA = 0.05 mg/m<sup>3</sup>

Aluminium (metal dust): 8hr TWA = 10 mg/m<sup>3</sup>

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

### Appropriate engineering controls

#### **Engineering controls**

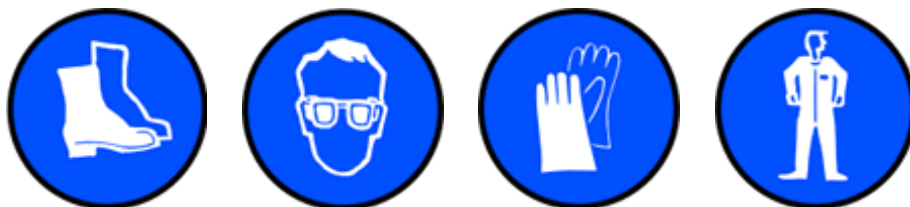
Apply technical measures to comply with the occupational exposure limits. Ensure adequate ventilation, especially in confined areas.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

### Individual protection measures, such as personal protective equipment

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES.



#### **Eye/face protection**

Wear safety glasses with side shields (or goggles).

#### **Skin and body protection**

Overalls. Protective shoes or boots.

#### **Hand protection**

Protective gloves.

#### **Respiratory protection**

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

#### **Environmental exposure controls**

No information available.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

### Information on basic physical and chemical properties

<b>Physical state</b>	Solid
<b>Appearance</b>	Article.
<b>Color</b>	No information available
<b>Odor</b>	Odourless
<b>Odor threshold</b>	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
<b>pH</b>	No data available	None known
<b>pH (as aqueous solution)</b>	No data available	None known
<b>Melting point / freezing point</b>	No data available	None known
<b>Boiling point / boiling range</b>	No data available	None known

Flash point	Not applicable	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	No data available	None known
Water solubility	Insoluble in water	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	Explosive; mass explosion hazard	

Other information**10. STABILITY AND REACTIVITY**Reactivity

Reactivity Explosive.

Chemical stability

Stability Risk of explosion by shock, friction, fire or other sources of ignition. Heating, particularly under confinement, may cause an explosion. Detonation may occur from static electricity discharge or mechanical/heavy impact, particularly under confinement.

Explosion data

Sensitivity to mechanical impact Yes.

Sensitivity to static discharge Yes.

Possibility of hazardous reactions

Possibility of hazardous reactions Explosion may result due to shock, friction, fire or other sources of ignition. Detonation may occur from heavy impact or excessive heating. A major fire may involve a risk of explosion. An adjacent detonation may also involve the risk of explosion. Mass explosion hazard. Explosion creates the potential for shrapnel.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid

Conditions to avoid Heat. Keep away from open flames, hot surfaces and sources of ignition. Static discharge (electrostatic discharge). Do not subject to grinding/shock/friction. Do not subject to shock. Avoid contact with other chemicals. Protect from moisture. Avoid exposure to radio transmitters (including mobile phones).

Incompatible materials

Incompatible materials Incompatible with combustible materials. Incompatible with oxidizing agents.

Hazardous decomposition products

**Hazardous decomposition products** Carbon oxides. Nitrogen oxides. Lead oxides. Lead fume. Aluminium oxides.

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

#### Information on likely routes of exposure

<b>Product Information</b>	No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:
<b>Inhalation</b>	Not an expected route of exposure. Initiation can cause the presence of lead fume in air. Test firing of detonators in poorly ventilated areas can cause presence of lead fume in air. Lead fumes may be irritant to mucous membranes and respiratory tract. Harmful: danger of serious damage to health by prolonged exposure through inhalation.
<b>Eye contact</b>	Not expected to cause eye irritation.
<b>Skin contact</b>	Not expected to cause skin irritation. Contact with contents may cause irritation or dermatitis. Shrapnel from detonation may cause burns, wounds and bruises.
<b>Ingestion</b>	Specific test data for the substance or mixture is not available.
<b>Symptoms</b>	None known.

#### Numerical measures of toxicity - Product Information

No information available

#### Numerical measures of toxicity - Component Information

##### Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Pentaerythritol tetranitrate (PETN)	= 1660 mg/kg ( Rat )	-	-
Cyclotetramethylenetetranitramine (HMX)	= 6490 mg/kg ( Rat )	= 719 mg/kg ( Rabbit ) = 634 mg/kg ( Rabbit ) > 5 g/kg ( Rat ) = 630 mg/kg ( Rabbit )	-

See section 16 for terms and abbreviations

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

<b>Skin corrosion/irritation</b>	No information available.
<b>Serious eye damage/eye irritation</b>	No information available.
<b>Respiratory or skin sensitization</b>	No information available.
<b>Germ cell mutagenicity</b>	No information available.
<b>Carcinogenicity</b>	No information available.
<b>Reproductive toxicity</b>	No information available.
<b>STOT - single exposure</b>	No information available.

**STOT - repeated exposure** No information available.

**Aspiration hazard** No information available.

**Chronic effects:** Long term exposure to low concentrations of lead (by any route) may result in blood effects, anaemia, central and peripheral nervous system damage, gastrointestinal disturbances, renal injury, foetotoxicity, developmental deficiencies in neonates and children, and testicular damage including decreased sperm count.

Exposure to explosive charge material unlikely. The main hazard is the possibility of exposure to lead fumes when test firing detonators in a poorly ventilated area. The effects of lead poisoning may not be apparent immediately but significant absorption over a period of time may produce adverse effects as noted earlier due to accumulation of lead in the body.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

**Ecotoxicity** Keep out of waterways. May cause long-term adverse effects in the aquatic environment.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Pentaerythritol tetranitrate (PETN)	-	LC50: =926mg/L (96h, Pimephales promelas)	-	-
Cyclotetramethylenetetra nitramine (HMX)	-	LC50: 8.8 - 26mg/L (96h, Pimephales promelas) LC50: >32mg/L (96h, Lepomis macrochirus) LC50: >32mg/L (96h, Oncorhynchus mykiss)	-	-

### Persistence and degradability

**Persistence and degradability** Components are persistent in the environment.

### Bioaccumulative potential

**Bioaccumulation** Lead is considered to be bioaccumulative in the environment and may accumulate in aquatic and terrestrial plants and animals.

### Mobility

**Mobility in soil** No information available.

### Other adverse effects

**Other adverse effects** Contains lead compounds which can be harmful to the environment.

## 13. DISPOSAL CONSIDERATIONS

### Waste treatment methods

**Waste from residues/unused products** Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation. Small quantities of damaged or deteriorated explosives may be destroyed by inclusion in a blast hole containing good explosive (s). For large quantities of damaged or deteriorated explosives notify Orica Australia Pty Ltd and/or Orica New



Zealand Pty Ltd.

**14. TRANSPORT INFORMATION****ADG**

Classified as Dangerous Goods by the criteria of the Australian Code for the Transport of Explosives by Road and Rail; DANGEROUS GOODS.

**UN number** 0360  
**Proper shipping name** DETONATOR ASSEMBLIES, NON-ELECTRIC  
**Hazard class** 1.1B  
**Hazchem code** E

**IATA**

Forbidden

TRANSPORT PROHIBITED under the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air in Passenger and Cargo Aircraft, and Cargo Aircraft Only.

**IMDG**

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

**UN number** 0360  
**UN proper shipping name** DETONATOR ASSEMBLIES, NON-ELECTRIC  
**Transport hazard class(es)** 1.1B  
**IMDG EMS Fire** F-B  
**IMDG EMS Spill** S-X

**15. REGULATORY INFORMATION****Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations****Australia**

Classified as dangerous goods in accordance with the Australian Code for the Transport of Explosives by Road and Rail.

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

See section 8 for national exposure control parameters

**Poisons Schedule (SUSMP)** None allocated

Chemical name	National pollutant inventory
Lead azide - 13424-46-9	10 tonne/yr Threshold category 1 2000 tonne/yr Threshold category 2b 60000 MWH Threshold category 2b 20 MW Threshold category 2b

**International Inventories****AIIC**

All the constituents of this material are listed on the Australian Inventory of Industrial Chemicals.

**Legend:**

AIIC- Australian Inventory of Industrial Chemicals

**International Regulations**

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

**16. OTHER INFORMATION****Reason(s) For Issue:** 5 Yearly Revised Primary SDS**Issuing Date:** 15-Mar-2023

This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).

**Revision Note:**

The symbol (\*) in the margin of this SDS indicates that this line has been revised.

**Key or legend to abbreviations and acronyms used in the safety data sheet****Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

**Key literature references and sources for data used to compile the SDS**

EPA (Environmental Protection Agency)  
Acute Exposure Guideline Level(s) (AEGL(s))  
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act  
U.S. Environmental Protection Agency High Production Volume Chemicals  
Food Research Journal  
Hazardous Substance Database  
International Uniform Chemical Information Database (IUCLID)  
Japan GHS Classification  
Australian Industrial Chemicals Introduction Scheme (AICIS)  
NIOSH (National Institute for Occupational Safety and Health)  
National Library of Medicine's ChemID Plus (NLM CIP)  
National Library of Medicine's PubMed database (NLM PUBMED)  
National Toxicology Program (NTP)  
New Zealand's Chemical Classification and Information Database (CCID)  
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications  
Organization for Economic Co-operation and Development High Production Volume Chemicals Program  
Organization for Economic Co-operation and Development Screening Information Data Set  
RTECS (Registry of Toxic Effects of Chemical Substances)  
World Health Organization

**Disclaimer**

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since The Supplier cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Supplier representative or The Supplier at the contact details on page 1.

The Supplier's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

**End of Safety Data Sheet**