

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

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

Details of the supplier of the safety data sheet

Supplier

Orica New Zealand Limited
Street Address:
Brunnings Road
Carters Beach
Westport, 7892
New Zealand

Telephone Number: +64 3 788 8163

For further information, please contact

Contact Point Product Safety Department

Emergency telephone number

Emergency Telephone 0 800 734 607 (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

Classified as a Dangerous Good according to NZS 5433 Transport of Dangerous Goods on Land; DANGEROUS GOODS.

Classified as hazardous according to criteria in the Hazardous Substances (Hazard Classification) Notice 2020.

GHS Classification

SIGNAL WORD

Danger

EPA New Zealand HSNO approval code or group standard HSR100156

The 'Health and Safety at Work (Hazardous Substances) Regulations, 'Hazardous substances that require tracking' are applicable to this material.

Explosives	Division 1.1 Category B
-------------------	-------------------------

Label elements



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

Precautionary Statements - Response

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

Precautionary Statements - Storage

Store in accordance with local regulations

Precautionary Statements - Disposal

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

Other hazards which do not result in classification

No information available

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
Emergency telephone number	Poisons Information Center, New Zealand: 0800 764 766 Poisons Information Center, Australia: 13 11 26
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.
Eye contact	Not an expected route of exposure. Get medical attention if symptoms occur.
Skin contact	Not an expected route of exposure. If skin irritation or rash occurs: Get medical advice/attention.
Ingestion	Get immediate medical advice/attention.
Self-protection of the first aider	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

Symptoms None known.

Indication of any immediate medical attention and special treatment needed

Note to physicians 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.

5. FIRE FIGHTING MEASURES**Suitable Extinguishing Media**

Suitable Extinguishing Media Do not fight fires involving explosives.

Unsuitable extinguishing media**Specific hazards arising from the chemical**

Specific hazards arising from the chemical 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 gases and vapors.

Hazardous combustion products Carbon oxides. Nitrogen oxides. Lead oxides. Lead fume. Aluminium oxides.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters 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.

Hazchem code E

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Personal precautions	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.
Other information	Refer to protective measures listed in Sections 7 and 8. 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.

Precautions to prevent secondary hazards

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters**Exposure Limits**

No value assigned for this specific material by the New Zealand Workplace Health & Safety Authority. However, Workplace Exposure Standard(s) for constituent(s):

Lead, inorganic dusts & fumes, as Pb: WES-TWA 0.05 mg/m³, bio, carcinogen category 2, (oto)
Aluminium, as Al Metal dust: WES-TWA 10 mg/m³

Lead (inorganic) - Biological Exposure Index (in urine): 1.5 umol/L (150 ug/L).

Lead BEI: Biological Agent Reference Value (BRV) for lead in whole blood of females of reproductive capacity at 3 ug/dL (0.14 umol/L); BEI for lead in whole blood of all other workers at 10 ug/dL (0.48 umol/L)

As published by the New Zealand Workplace Health & Safety Authority.

WES - TWA (Workplace Exposure Standard - Time Weighted Average) - The eight-hour, time-weighted average exposure standard is designed to protect the worker from the effects of long-term exposure.

Carcinogen Category 2 - probable human carcinogen. There is sufficient evidence to provide a strong presumption that human exposure may result in the development of cancer. This evidence is generally based on appropriate long term animal studies, limited epidemiological evidence or other relevant information.

(oto) - Toxic to the ear

'bio' - Biological Exposure Index.

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).
Hand protection	Protective gloves.
Skin and body protection	Overalls. Protective shoes or boots.
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

Physical state	Solid
Appearance	Article.
Color	No information available
Odor	Odourless
Odor threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	No data available	None known
Melting point / freezing point	No data available	None known
Boiling point / boiling range	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****Hazardous polymerization** Hazardous polymerization does not occur.**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.**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****Product Information** 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:**Inhalation** 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.**Eye contact** Not expected to cause eye irritation.**Skin contact** Not expected to cause skin irritation. Contact with contents may cause irritation or dermatitis. Shrapnel from detonation may cause burns, wounds and bruises.**Ingestion** Specific test data for the substance or mixture is not available.**Symptoms** None known.**Acute toxicity****Numerical measures of toxicity**

No information available

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

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation No information available.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Based on available data, the classification criteria are not met. Classification is based on mixture calculation methods based on component data. The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	New Zealand	IARC
Pentaerythritol tetranitrate (PETN) - 78-11-5		Group 2A
Lead azide - 13424-46-9	Suspected carcinogen	Group 2A

Reproductive toxicity No information available.

STOT - single exposure 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 lasting harmful effects to aquatic life.

Terrestrial ecotoxicity There is no data for this product.

Chemical name	Algae/aquatic plants	Fish	Crustacea
Pentaerythritol tetranitrate (PETN)	-	LC50: =926mg/L (96h, Pimephales promelas)	-

Cyclotetramethylenetetranitramine (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 product in packaging/container in a way that is consistent with the Hazardous Substances (Disposal) Notice 2017 and the Act, and Hazardous Substances (Amendments and Revocations) Notice 2020. Treat the chemical using a method that changes the characteristics or composition of the chemical so that the chemical is no longer a hazardous chemical; or export the chemical from New Zealand as waste.

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.

Contaminated packaging

For packages that have been in direct contact with hazardous chemicals, the person must ensure that the package is rendered incapable of containing any chemical. It must be disposed of in a manner that is consistent with the requirements for disposal of the chemical that it contained, taking into account the material the package is manufactured from. Packages may only be reused or recycled if the package has been treated to remove any residual contents of the hazardous chemical (class 1, 2, 3, 4, or 5); or the contents of the residue in the package are below the threshold for the chemical to be classified as hazardous (class 6, 8, or 9 chemical).

14. TRANSPORT INFORMATION**ROAD AND RAIL TRANSPORT**

Classified as a Dangerous Good according to NZS 5433 Transport of Dangerous Goods on Land; DANGEROUS GOODS.

UN number

0360

Proper shipping name

DETONATOR ASSEMBLIES, NON-ELECTRIC

Hazard class

1.1B

Hazchem code	E
<u>IATA</u>	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.
<u>IMDG</u>	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

New Zealand

National regulations See section 8 for national exposure control parameters

The 'Health and Safety at Work (Hazardous Substances) Regulations', 'Hazardous substances that require tracking' are applicable to this material.

EPA New Zealand HSNO approval code or group standard HSR100156

International Inventories

NZIoC	Contact supplier for inventory compliance status.
TSCA	Contact supplier for inventory compliance status.
DSL/NDSL	Contact supplier for inventory compliance status.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
IECSC	Contact supplier for inventory compliance status.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AIIC	All the constituents of this material are listed on the Australian Inventory of Industrial Chemicals.

Legend:

NZIoC - New Zealand Inventory of Chemicals

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

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

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

Issuing Date: 15-Mar-2023

Reason(s) For Issue: 5 Yearly Revised Primary SDS

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

Agency for Toxic Substances and Disease Registry (ATSDR)
 U.S. Environmental Protection Agency ChemView Database
 European Food Safety Authority (EFSA)
 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