

# SAFETY DATA SHEET

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## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

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### 1.1 Product identifier

**Product name** ELECTRIC DETONATORS  
**Synonyms** ELECTRIC SUPER STARTER

### 1.2 Uses and uses advised against

**Uses** DELAY IN DETONATOR ASSEMBLIES • DETONATORS

### 1.3 Details of the supplier of the product

**Supplier name** DYNO NOBEL ASIA PACIFIC LIMITED  
**Address** 282 Paringa Rd, Gibson Island, Murarrie, QLD, 4172, AUSTRALIA  
**Telephone** (07) 3026 3900  
**Fax** (07) 3026 3999  
**Website** <http://www.dynonobel.com>

### 1.4 Emergency telephone numbers

**Emergency** 1800 098 836

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## 2. HAZARDS IDENTIFICATION

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### 2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

#### Physical Hazards

Explosives: Division 1.1

#### Health Hazards

Acute Toxicity: Oral: Category 4  
Skin Sensitisation: Category 1  
Acute Toxicity: Inhalation: Category 4  
Germ Cell Mutagenicity: Category 2  
Carcinogenicity: Category 1  
Toxic to Reproduction: Category 1A  
Specific Target Organ Toxicity (Repeated Exposure): Category 2

#### Environmental Hazards

Aquatic Toxicity (Chronic): Category 2

### 2.2 GHS Label elements

**Signal word** DANGER

**Pictograms**



**PRODUCT NAME ELECTRIC DETONATORS****Hazard statements**

H201	Explosive; mass explosion hazard.
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H360	May damage fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

**Prevention statements**

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P230	Keep wetted.
P234	Keep only in original packaging.
P240	Ground and bond container and receiving equipment.
P250	Do not subject to grinding/shock/friction/rough handling.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

**Response statements**

P302 + P352	IF ON SKIN: Wash with plenty of water.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P321	Specific treatment is advised - see first aid instructions.
P330	Rinse mouth.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P370 + P372 + P380 + P391	In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives. Collect spillage.

**Storage statements**

P401	Store in accordance with relevant site and storage provisions.
P405	Store locked up.

**Disposal statements**

P501	Dispose of contents/container in accordance with relevant regulations.
P503	Refer to manufacturer/supplier for information on disposal/recovery/recycling.

**2.3 Other hazards**

No information provided.

**3. COMPOSITION/ INFORMATION ON INGREDIENTS****3.1 Substances / Mixtures**

Ingredient	CAS Number	EC Number	Content
PENTAERYTHRITOL TETRANITRATE (PETN)	78-11-5	201-084-3	30 to 60%
BARIUM CHROMATE	10294-40-3	233-660-5	10 to 30%
6-DIAZO-2,4-DINITROCYCLOHEXA-2,4-DIEN-1-ONE	4682-03-5	225-134-9	<9.99%
BORON	7440-42-8	231-151-2	<9.99%
LEAD DIOXIDE	1309-60-0	215-174-5	<9.99%
NITROCELLULOSE	9004-70-0	618-392-2	<9.99%
POTASSIUM PERCHLORATE	7778-74-7	231-912-9	<9.99%
TUNGSTEN	7440-33-7	231-143-9	<9.99%
NON HAZARDOUS INGREDIENTS	Not Available	Not Available	Remainder

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## **4. FIRST AID MEASURES**

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### **4.1 Description of first aid measures**

<b>Eye</b>	Exposure is considered unlikely unless casing is damaged. Flush gently with running water. Seek medical attention if irritation develops.
<b>Inhalation</b>	Due to product form / nature of use, an inhalation hazard is not anticipated.
<b>Skin</b>	Exposure is considered unlikely unless casing is damaged. Gently flush affected areas with water. Seek medical attention if irritation develops.
<b>Ingestion</b>	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.
<b>First aid facilities</b>	Eye wash facilities and safety shower should be available.

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

See Section 11 for more detailed information on health effects and symptoms.

### **4.3 Immediate medical attention and special treatment needed**

Treat symptomatically.

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## **5. FIRE FIGHTING MEASURES**

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### **5.1 Extinguishing media**

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

### **5.2 Special hazards arising from the substance or mixture**

EXPLOSIVE. Will explode under specific conditions. May evolve toxic gases (carbon/ nitrogen/ lead oxides) when heated to decomposition or detonated. 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.

### **5.3 Advice for firefighters**

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.

### **5.4 Hazchem code**

1YE	
1	Coarse Water Spray.
Y	Risk of violent reaction or explosion. Wear full fire kit and breathing apparatus. Contain spill and run-off.
E	Evacuation of people in and around the immediate vicinity of the incident should be considered.

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## **6. ACCIDENTAL RELEASE MEASURES**

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### **6.1 Personal precautions, protective equipment and emergency procedures**

Clear area of all unprotected personnel. Contact emergency services where appropriate. CAUTION: Heating, impact or static charge may cause explosion.

### **6.2 Environmental precautions**

Prevent product from entering drains and waterways.

### **6.3 Methods of cleaning up**

If cartridges are spilt or containers damaged, contain spillage, then collect and place in suitable containers for disposal. Eliminate all sources of ignition.

### **6.4 Reference to other sections**

See Sections 8 and 13 for exposure controls and disposal.

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## **7. HANDLING AND STORAGE**

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### **7.1 Precautions for safe 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. Take precautionary measures against static discharge.

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

Store in a clean, dry magazine licensed for detonators. Detonators should not be stored with explosives. Store removed from incompatible materials and heat or ignition sources. Ensure the magazine is adequately placarded. Large storage areas should have appropriate ventilation and fire protection systems.

### 7.3 Specific end uses

No information provided.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1 Control parameters

#### Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Borates, anhydrous	SWA [AUS]	--	1	--	--
Chromium (VI) (as Cr)	SWA [Proposed]	--	7E-6	--	--
Chromium (VI) compounds (as Cr)	SWA [AUS]	--	0.05	--	--
Lead, inorganic dusts & fumes (as Pb)	SWA [AUS]	--	0.05	--	--
Tungsten, insoluble compounds (as W)	SWA [AUS]	--	5	--	10
Tungsten, soluble and insoluble compounds (as W)	SWA [Proposed]	--	3	--	--
Tungsten, soluble compounds (as W)	SWA [AUS]	--	1	--	3

#### Biological limits

Ingredient	Determinant	Sampling Time	BEI
BARIUM CHROMATE	Total chromium in urine	End of shift at end of workweek	25 µg/L
	Total chromium in urine	Increase during shift	10 µg/L
PENTAERYTHRITOL TETRANITRATE (PETN)	Methemoglobin in blood	During or end of shift	1.5% of hemoglobin

Reference: ACGIH Biological Exposure Indices

### 8.2 Exposure controls

**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

- Eye / Face** Wear safety glasses.  
**Hands** Wear PVC or rubber gloves.  
**Body** Wear coveralls.  
**Respiratory** Not required under normal conditions of use.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

Appearance	METAL TUBE
Odour	SLIGHT ODOUR
Flammability	EXPLOSIVE
Flash point	NOT AVAILABLE
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE

## PRODUCT NAME ELECTRIC DETONATORS

### 9.1 Information on basic physical and chemical properties

Vapour density	NOT AVAILABLE
Relative density	NOT AVAILABLE
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

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## 10. STABILITY AND REACTIVITY

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### 10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

### 10.2 Chemical stability

No information provided.

### 10.3 Possibility of hazardous reactions

No information provided.

### 10.4 Conditions to avoid

No information provided.

### 10.5 Incompatible materials

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 (e.g. nitric acid), metal powders, reducing agents (e.g. sulphites), combustibles and oxidisers.

### 10.6 Hazardous decomposition products

May evolve toxic gases (carbon/ nitrogen/ lead oxides) when heated to decomposition or detonated.

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## 11. TOXICOLOGICAL INFORMATION

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### 11.1 Information on toxicological effects

**Acute toxicity** Harmful if swallowed and if inhaled. WARNING: May explode with shock, heat, friction or static charge. Serious damage may result from explosive fragments.

#### Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
PENTAERYTHRITOL TETRANITRATE (PETN)	1660 mg/kg (rat)	--	--
BORON	650 mg/kg (rat)	--	--
NITROCELLULOSE	> 5 g/kg (rat)	--	--
TUNGSTEN	> 2,000 mg/kg (rat)	> 2,000 mg/kg (rat)	> 5.4 mg/l/4hrs (rat)

**Skin** Not classified as a skin irritant. Due to product form, exposure can only occur during detonation. Serious damage may result from explosive fragments.

**Eye** Not classified as an eye irritant. Due to product form, exposure can only occur during detonation. Serious damage may result from explosive fragments.

**Sensitisation** Exposure to contents may cause skin sensitisation. This product is not classified as a respiratory sensitiser.

**Mutagenicity** Suspected of causing genetic defects.

**Carcinogenicity** Chromium (VI) compounds are classified as carcinogenic to humans (Group 1). Lead compounds (inorganic) are classified as probably carcinogenic to humans (IARC Group 2A). Selenium and Selenium compounds are not classifiable as to their carcinogenicity (IARC Group 3).

**Reproductive** Lead and lead compounds are classified as damaging fertility or the unborn child.

**STOT - single exposure** Not classified as causing organ damage from single exposure. However, serious damage may result from explosive fragments.

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**STOT - repeated exposure** Lead is a cumulative poison, and symptoms are often delayed. Repeated exposure may result in lead poisoning. Symptoms may include blood, kidney and central nervous system/brain damage. Due to product form (enclosed), the potential for exposure to contents is not anticipated.

**Aspiration** Not classified as causing aspiration.

**12. ECOLOGICAL INFORMATION****12.1 Toxicity**

Toxic to aquatic life with long lasting effects.

**12.2 Persistence and degradability**

No information provided.

**12.3 Bioaccumulative potential**

No information provided.

**12.4 Mobility in soil**

No information provided.

**12.5 Other adverse effects**

No information provided.

**13. DISPOSAL CONSIDERATIONS****13.1 Waste treatment methods**

**Waste disposal** Waste must be disposed of in accordance with AS2187.2 as well as state regulatory and environmental legislation. Small quantities of damaged or deteriorated material may be destroyed by inclusion in a blast hole containing good explosives (by licensed personnel). Detonators should not be inserted into defective explosives. For large quantities, contact the manufacturer/supplier for additional information.

**Legislation** Dispose of in accordance with relevant local legislation.

**14. TRANSPORT INFORMATION**

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



	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
<b>14.1 UN Number</b>	0255	0255	0255
<b>14.2 Proper Shipping Name</b>	DETONATORS, ELECTRIC for blasting	DETONATORS, ELECTRIC for blasting	DETONATORS, ELECTRIC for blasting
<b>14.3 Transport hazard class</b>	1.1B	1.1B	1.4B
<b>14.4 Packing Group</b>	None allocated.	None allocated.	None allocated.

**14.5 Environmental hazards**

Marine Pollutant.

**14.6 Special precautions for user**

**Hazchem code** 1YE

**EmS** F-B, S-X

**Other information**

The environmentally hazardous substance mark is not required when transported in packages of less than 5 kg/L (UN Model Regulations: Special Provision 375; IATA: Special Provision A197; IMDG: Special Provision 969) or less than 500 kg/L by Australian Road and Rail.

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## 15. REGULATORY INFORMATION

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### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

<b>Poison schedule</b>	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
<b>Classifications</b>	Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).
<b>Inventory listings</b>	<b>AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)</b> All components are listed on AIIC, or are exempt.

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## 16. OTHER INFORMATION

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**Additional information**      **DISCLAIMER:** The information provided herein concern explosive products which should only be handled by persons having the appropriate technical expertise, training, and licence(s). The result is largely dependent upon the conditions of storage, transportation and use.

Whilst Dyno Nobel Asia Pacific make every effort to ensure the information contained within this SDS is as accurate and up-to-date as possible, the conditions under which its products are used are not within Dyno Nobel Asia Pacific's control. Each user has the responsibility to ensure awareness of the details contained within this SDS, the product applications, and the specific context of the intended usage. Buyers and users assume all risk, responsibility and liability arising from the use of this product and the information within this SDS. Dyno Nobel Asia Pacific is not responsible for damages of any nature resulting from the use of its products or reliance upon the information. Dyno Nobel Asia Pacific makes no express or implied warranties other than those implied mandatory by the Commonwealth, State or Territory Legislation.

**EXPLOSIVES & BLASTING AGENTS:** Refer to Local State and Federal legislation that specifically relates to the use of Explosives. Users of products described in this ChemAlert Report are advised to ensure familiarity and compliance with the appropriate legal requirements (e.g. 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 and if possible remove vehicles and further heat and ignition sources from the area. Consult with emergency services to determine evacuation distance and suitable re-entry time.

**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. While Dyno Nobel Asia Pacific makes every effort to ensure the details contained in the data sheet are as current and accurate as possible the conditions under which its products are used are not within Dyno Nobel Asia Pacific Limited's control. Each user is responsible for being aware of the details in the data sheet and the product applications in the specific context of the intended use. Buyers and users assume all risk, responsibility and liability arising from the use of this product and the information in this data sheet. Dyno Nobel Asia Pacific Limited is not responsible for damages of any nature resulting from the use of its products or reliance upon the information. Dyno Nobel Asia Pacific Limited makes no express or implied warranties other than those implied mandatory by Commonwealth, State or Territory legislation.

#### **PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:**

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, 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.

#### **HEALTH EFFECTS FROM EXPOSURE:**

It should be noted that the effects from exposure to this product will depend on several factors including: form of product; 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 report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.



**PRODUCT NAME ELECTRIC DETONATORS**

**Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m <sup>3</sup>	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

**Report status**

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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