1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: ELECTRIC DETONATORS (1.4S PACKAGING)

Other name(s): Electric Instantaneous II Detonators (1.4S), Instantaneous II Detonators (1.4S), Carrick II Detonators (1.4S), Carrick II Electric Detonators (1.4S), Dynaseis detonators (1.4S)

Recommended Use: Initiators for explosive charges.

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

Telephone Number: +61 3 9665 7111
Facsimile: +61 3 9665 7937
Emergency Telephone: 1 800 033 111 (ALL HOURS)

2. HAZARDS IDENTIFICATION

Based on available information, not classified as hazardous according to criteria of Safe Work Australia; NON-HAZARDOUS SUBSTANCE.

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

Risk Phrases: Risk of explosion by shock, friction, fire or other sources of ignition.

Take precautionary measures against static discharges.

Poisons Schedule: None allocated.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Product Description: Metal tubes (aluminium or copper), closed at one end and capped at the other with plastic closure plug ending in plastic covered electric lead. Contains explosive charges and fusehead.

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS Number</th>
<th>Proportion</th>
<th>Risk Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal and plastic components</td>
<td>-</td>
<td>&gt;60%</td>
<td>-</td>
</tr>
<tr>
<td>Aluminium powder (stabilised)</td>
<td>7429-90-5</td>
<td>&lt;1%</td>
<td>R11, R15</td>
</tr>
<tr>
<td>Pentaerythritol tetranitrate (PETN)</td>
<td>78-11-5</td>
<td>&lt;1%</td>
<td>R3</td>
</tr>
<tr>
<td>Lead azide</td>
<td>13424-46-9</td>
<td>&lt;1%</td>
<td>R3,R20/22,R33,R50/53,R61(1),R62(3)</td>
</tr>
<tr>
<td>Lead stypnate</td>
<td>15245-44-0</td>
<td>&lt;1%</td>
<td>R61(1),R62(3),R20/22,R33</td>
</tr>
<tr>
<td>Tetryl (N-Methyl- N,2,4,6-tetranitroaniline)</td>
<td>479-45-8</td>
<td>&lt;1%</td>
<td>R23/24/25,R33</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor. Construction of the product normally prevents contact with explosive component, however, in the event of exposure:

Inhalation:
Remove victim from area of exposure - avoid becoming a casualty. Seek medical advice if effects persist.
Safety Data Sheet

Skin Contact:
If skin contact occurs, remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice.

Eye Contact:
If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Ingestion:
Rinse mouth with water. If swallowed, give a glass of water to drink. If vomiting occurs give further water. Seek immediate medical assistance.

Medical attention and special treatment:
Treat symptomatically. Explosive material. Long term exposure to detonation fumes may result in lead poisoning.

5. FIRE FIGHTING MEASURES

Hazards from combustion products:
Explosive material. Risk of explosion by shock, friction, fire or other sources of ignition. Avoid all ignition sources.

Precautions for fire fighters and special protective equipment:
Explosive. Severe detonation hazard when exposed to heat. In case of a small fire where the actual explosive is not involved, carefully remove explosive to a safe distance. If explosive is burning, fight fire from a protected location. On burning will emit toxic fumes, including those of lead. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion.

Suitable Extinguishing Media:
Coarse water spray.

Hazchem Code: 1YE

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures:
Shut off all possible sources of ignition. Clear area of all unprotected personnel. If contamination of sewers or waterways has occurred advise local emergency services.

Methods and materials for containment and clean up:
Collect and seal in properly labelled containers. Use a spark-free shovel. In the case of a transport accident notify the Police, Explosives Inspector and Orica Australia Pty Ltd (Telephone: 1800 033 111 -- 24 hour service) and/or Orica New Zealand Pty Ltd (Telephone: 0800 734 607 -- 24 hour service).

7. HANDLING AND STORAGE

Conditions for safe storage:
Store away from sources of heat or ignition. Store material in a well ventilated magazine suitably licensed for Class 1.4S Explosives. Do not store detonators in an explosives magazine.

Precautions for safe handling:
Avoid all ignition sources. Do NOT subject the material to impact, friction between hard surfaces nor to any form of heating. Ensure radio transmitters are not allowed near electric detonators. Detonators are explosive - handle with care. Take precautionary measures against static discharges. Keep out of reach of children. Electric Instantaneous II Detonators WILL initiate if the lead-wires touch the aerial of a radio transmitter (including mobile phones). (1)
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Occupational Exposure Limits:** No value assigned for this specific material by the National Occupational Health and Safety Commission. However, Exposure Standard(s) for constituent(s):

- Lead, inorganic dusts & fumes (as Pb): 8hr TWA = 0.15 mg/m³
- Aluminium (metal dust): 8hr TWA = 10 mg/m³
- Tetryl: 8hr TWA = 1.5 mg/m³

As published by the National Occupational Health and Safety Commission.

TWA - The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

These 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 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.

**Engineering controls:**
When test firing, ensure ventilation is adequate and that air concentrations of components are controlled below quoted Exposure Standards.

**Personal Protective Equipment:**
The selection of PPE is dependant 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.


Containment of charge within metal tube prevents exposure. Wear standard safety equipment - overalls and safety shoes. DO NOT eat, drink or smoke in lead contaminated areas. Always wash hands before smoking, eating, drinking or using the toilet.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical state:</th>
<th>Article, Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour:</td>
<td>Various</td>
</tr>
<tr>
<td>Odour:</td>
<td>Odourless</td>
</tr>
<tr>
<td>Solubility:</td>
<td>Insoluble in water.</td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td>N Av</td>
</tr>
<tr>
<td>Flash Point (°C):</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Chemical stability: Explosive material. Avoid ignition sources, static electricity discharge and friction. Stable if stored and handled under recommended conditions.

Conditions to avoid: Avoid exposure to heat, sources of ignition, and open flame. Avoid exposure to shock, friction, fire and other sources of ignition. Avoid build up of static electricity. Avoid exposure to radio transmitters (including mobile phones).

Incompatible materials: Incompatible with other chemicals.


Hazardous reactions: Explosive material. Explosion may result due to shock, friction, fire and other sources of ignition. Electric Instantaneous II Detonators WILL initiate if the lead-wires touch the aerial of a radio transmitter (including mobile phones). Explosion creates the potential for shrapnel. Detonation may occur from impact, friction, excessive heating or by electrical energy from an extraneous source (lightning, static electricity, stray currents, galvanic electricity or electromagnetic radiation).

11. TOXICOLOGICAL INFORMATION

The construction of these articles should prevent any chemical contamination. No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: No information available.

Eye contact: May be an eye irritant. However, not a likely route of exposure.

Skin contact: Contact with metal tube contents may result in irritation.

Inhalation: Not expected to cause respiratory irritation (closed system). Inhalation of dust may result in respiratory irritation. Initiation can cause the presence of lead fume in air. Lead fume may be irritant to mucous membranes and respiratory tract. 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.

Long Term 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.

Toxicological Data: No LD50 data available for the product. 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: Avoid contaminating waterways. Contains lead compounds which can be harmful to the environment.

13. DISPOSAL CONSIDERATIONS

Product Name: ELECTRIC DETONATORS (1.4S PACKAGING)  
Substance No: 000000009307  
Issued: 01/06/2011  
Version: 2
13. DISPOSAL CONSIDERATIONS

Disposal methods:
For small quantities: Place in a blast hole and explode during blasting. Large quantities should be returned to Orica Australia Pty Ltd/Orica New Zealand Pty Ltd or be disposed of in conjunction with the Land Waste Management Authority. Do not move detonators showing obvious signs of deterioration. Contact Orica Australia Pty Ltd or the relevant State Dangerous Goods Branch.

14. TRANSPORT INFORMATION

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

- UN No: 0456
- Class-primary: 1.4 S Explosive
- Proper Shipping Name: DETONATORS, ELECTRIC
- Hazchem Code: 1YE

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

- UN No: 0456
- Class-primary: 1.4 S Explosive
- Proper Shipping Name: DETONATORS, ELECTRIC

Air Transport
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

- UN No: 0456
- Class-primary: 1.4 S Explosive
- Proper Shipping Name: DETONATORS, ELECTRIC

15. REGULATORY INFORMATION

Classification: Based on available information, not classified as hazardous according to criteria of Safe Work Australia; NON-HAZARDOUS SUBSTANCE.

Risk Phrase(s): R2: Risk of explosion by shock, friction, fire or other sources of ignition.

Safety Phrase(s): S2: Keep out of the reach of children.
S16: Keep away from sources of ignition - No smoking.
S33: Take precautionary measures against static discharges.

Poisons Schedule: None allocated.
(1) Supplier Technical Data Sheet 06/2008.

This safety data sheet has been prepared by Chemicals Group SH&E, Orica.

**Reason(s) for Issue:**
Revised Primary SDS
Addition/Change of synonymous name(s)

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 Orica Limited cannot anticipate or control the conditions under which the product may be handled, each user must, prior to handling, assess and control the risks arising from its use of the material.

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

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