

# Material Safety Data Sheet

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Infosafe No. ACRU4 Issue Date : September 2003 ISSUED by DYNONOB

Product Name : **Z-BAR® Lifter**

Classified as hazardous according to criteria of NOHSC

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

**Product Name** Z-BAR® Lifter  
**Product Use** Blasting explosive.  
**Company Name** Dyno Nobel Asia Pacific Limited  
**Address** Level 20, AGL Building 111 Pacific Highway North Sydney  
NSW 2060  
**Emergency Tel.** 1800 098 836  
**Telephone Number/Fax** Tel: +61 2 9968 9000 Fax: +61 2 9964 0170

## 2. HAZARDS IDENTIFICATION

<b>Ingredients</b>	<b>Name</b>	<b>CAS</b>	<b>Proportion</b>
	Ammonium Nitrate	6484-52-2	60-100 %
	ALUMINIUM	7429-90-5	1-10 %
	Diesel Fuel	68334-30-5	1-10 %
	Pentaerythritol tetranitrate	78-11-5	10g/m

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Hazards Identification

EXPLOSIVE MATERIAL.  
POSSIBLE RISK OF IRREVERSIBLE EFFECTS.

## 4. FIRST AID MEASURES

**Inhalation** Remove victim from exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. In event of cardiac arrest, apply external cardiac massage. Seek immediate medical advice.

**Ingestion** Do NOT induce vomiting. Wash out mouth with water. Do not give anything by mouth to an unconscious person. Seek immediate medical attention. For advice, contact a Poisons Information Centre 131 126 or a doctor (at once).

**Skin** If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Wash contaminated clothing before re-use. If irritation occurs seek medical advice.

**Eye** If contact with the eye(s) occur, wash with running water holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. In all cases of eye contamination it is a sensible precaution to seek medical advice.

**First Aid Facilities** Eye wash and normal washroom facilities.

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**Advice to Doctor**

Treat symptomatically. May cause methaemoglobinemia. Clinical effects: The smooth muscle relaxant effects of nitrate salts may lead to headache, dizziness and marked hypotension. Cyanosis is clinically detectable when approximately 15% of the haemoglobin has been converted to methaemoglobin (ie. ferric iron). Symptoms such as headache, dizziness, weakness and dyspnoea occur when methaemoglobin concentrations are 30% to 40%; at levels of about 60%, stupor, convulsions, coma and respiratory paralysis occur and the blood is chocolate brown in colour. At higher levels death may result. Spectrophotometric analysis can determine the presence and concentration of methaemoglobin in blood.

Treatment:

1. Give 100% oxygen.
  2. In cases of (a) ingestion: use gastric lavage, (b) contamination of skin (unburnt or burnt): continue washing to remove salts.
  3. Observe blood pressure and treat hypotension if necessary.
  4. When methaemoglobin concentrations exceed 40% or when symptoms are present, give methylene blue 1 to 2 mg/kg body weight in a 1% solution by slow intravenous injection. If cyanosis has not resolved within one hour a second dose of 2 mg/kg body weight may be given. The total dose should not exceed 7 mg/kg body weight as unwanted effects such as dyspnoea, chest pain, vomiting, diarrhoea, mental confusion and cyanosis may occur. Without treatment methaemoglobin levels of 20-30% revert to normal within 3 days.
  5. Bed rest is required for methaemoglobin levels in excess of 40%.
  6. Continue to monitor and give oxygen for at least two hours after treatment with methylene blue.
  7. Consider transfer to centre where haemoperfusion can be performed to remove the nitrates from the blood if the condition of the patient is unstable.
  8. Following inhalation of oxides of nitrogen the patient should be observed in hospital for 24 hours for delayed onset of pulmonary oedema.
- Further observation for 2-3 weeks may be required to detect the onset of inflammatory changes of bronchiolitis fibrosa obliterans.

**5. FIRE FIGHTING MEASURES**

Explosive material. Avoid all ignition sources.

In case of a small fire, if actual explosive is not burning, carefully remove as much explosive as possible to a safe distance. Fire fighters to wear self-contained breathing apparatus if risk of exposure to vapour or products of combustion. However, if explosive is burning, evacuate area immediately. Do NOT fight fire. On burning under confined, or semi-confined conditions, some oxides of nitrogen and/or carbon monoxide will be present. Brown fumes indicate the presence of toxic oxides of nitrogen.

**6. ACCIDENTAL RELEASE MEASURES**

Clear area of all unprotected personnel. Shut off all possible sources of ignition. In the case of a transport accident notify the Police, Explosives Inspector and Dyno Nobel Asia Pacific, Mt Thorley Technical Centre, Telephone:(02) 6574 2500.

**7. HANDLING AND STORAGE****Handling**

Avoid skin and eye contact. Do NOT subject the material to impact, friction between hard surfaces nor to any form of heating. Do NOT drill into explosive. Avoid all contact with other chemicals.  
Product deterioration: The process of deterioration is a gradual crystallisation and caking of the ammonium nitrate. If there are signs of deterioration the product should be test fired before use.

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**Storage** Store material in a well ventilated magazine suitably licensed for Class 1.1D Explosives. Ammonium Nitrate is incompatible with, and must be stored away from, tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, any bromate, chlorate, chlorite, hypochlorite or chloroisocyanurate or any inorganic nitrite.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards	Name	STEL		TWA		Footnote
		mg/m3	ppm	mg/m3	ppm	
	ALUMINIUM			10		
<b>Other Exposure Information</b>	No exposure standards have been established for this material by the National Occupational Health & Safety Commission (NOHSC). However, exposure standards for ingredients are stated above. TWA - the Time-Weighted Average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life. STEL (Short Term Exposure Limit) - the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday. According to current knowledge these concentrations should neither impair the health of, nor cause undue discomfort to, nearly all workers. Peak Limitation - a ceiling concentration which should not be exceeded over a measurement period which should be as short as possible but not exceeding 15 minutes. 'Sk' notice - absorption through the skin may be a significant source of exposure. The exposure standard is invalidated if such contact should occur. 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. 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.					
<b>Personal Protective Equipment</b>	OVERALLS, SAFETY SHOES. Wear standard safety equipment - overalls and safety shoes. Always wash hands before smoking, eating, drinking or using the toilet.					
<b>Eng. Controls</b>	Use in well ventilated areas.					

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Z-Bar Lifter consists of 20mm ID White Plastic Tube, available in 3.1m, 3.5 and 3.9m lengths, filled with an ANFO and aluminium mixture and traced with 10 grams/metre Detonating Cord through the centre of the tubular charge. The Detonating Cord is plastic coated (unreinforced) 10g/m.
<b>Solubility in Water</b>	Soluble in water.
<b>Specific Gravity (H2O=1)</b>	0.75-0.85 g/cm3
<b>Flash Point</b>	Not applicable.

## 10. STABILITY AND REACTIVITY

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**Stability** Detonation may occur from heavy impact or excessive heating, particularly under confinement. Ammonium nitrate is a powerful oxidising agent. It is incompatible with tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, any bromate, chlorate, chlorite, hypochlorite or chloroisocyanurate, any inorganic nitrite and metal powders. When heated to decomposition (unconfined) it produces nitrous oxide, white ammonium nitrate fumes and water. When mixed with strong acids, and occasionally during blasting, it produces an irritating toxic brown gas, mostly of nitrogen dioxide. When molten may decompose violently due to shock or pressure.

## 11. TOXICOLOGICAL INFORMATION

**Toxicology Information** No toxicity data is available for this specific product, however toxicity data for constituents are stated below:  
For AMMONIUM NITRATE:  
Oral LD50 (rat): 2217 mg/kg.  
For PENTAERYTHRITOL TETRANITRATE:  
Oral LD50 (rat): 1660 mg/kg.  
Oral Lowest Lethal Dose (mouse): 7g/kg.  
NOEL (rat): 2 mg/kg PETN in diet for 1 year.  
PETN has been shown to be a vasodilator and overexposure can result in headaches, weakness and fall in blood pressure.

**Inhalation** Not expected to cause respiratory irritation.

**Ingestion** Not a likely route of exposure, however, swallowing the contents of the packages may result in nausea, vomiting and mild gastric irritation.

**Skin** Not a likely route of exposure, however, prolonged or repeated skin contact with the contents of the packages may result in irritation. Pentaerythrite Tetranitrate can be absorbed through your skin, thereby increasing your exposure.

**Eye** Not a likely route of exposure, however, contents of the packages may cause irritation to eyes.

**Chronic Effects** Long term effects:  
No information available for the product.

## 12. ECOLOGICAL INFORMATION

Avoid contaminating waterways.

**Information on Ecological Effects** No ecotoxicity data is available for this specific product, however toxicity data for constituents are stated below:  
For Ammonium Nitrate:  
Ammonium Nitrate was evaluated at 5, 10, 25 and 50mg (NH<sub>4</sub>)/L. The fertility of Daphnia magna was decreased at 50 mg/L. Post embryonic growth of crustacea was impaired at 10, 25 and 50 mg/L.  
40 hr LC50 (Aspergillus niger): 15 mg/L (36°C).

## 13. DISPOSAL CONSIDERATIONS

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 Dyno Nobel Asia Pacific, Mt Thorley Technical Centre, Telephone:(02) 6574 2500.

## 14. TRANSPORT INFORMATION

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**Road and Rail Transport:**

This material is classified as a Class 1 (Explosive) Dangerous Good according to the Australian Code for the Transport of Dangerous Goods.

Class 1 Explosives shall not be loaded or packed in the same vehicle or freight as:

- Flammable Gas (Class 2.1),
- Non-Flammable Non-Toxic Gas (Class 2.2),
- Toxic Gas (Class 2.3),
- Flammable Liquids (Class 3),
- Flammable Solids (Class 4.1),
- Spontaneously Combustible Substances (Class 4.2),
- Dangerous When Wet Substances (Class 4.3),
- Oxidising Agents (Class 5.1),
- Organic Peroxides (Class 5.2),
- Toxic and Infectious Substances (Class 6),
- Radioactive Substances (Class 7),
- Corrosive Substances (Class 8),
- Miscellaneous Dangerous Goods (Class 9),
- Fire Risk Substances.

**Marine Transport:**

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods (IMDG Code) for transport by sea:

UN No: 0241

Class-Primary: 1.1D Explosive

Proper Shipping Name: EXPLOSIVE, BLASTING, TYPE E

**Air Transport:**

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

U.N. Number 0082

Proper Shipping Name EXPLOSIVE, BLASTING, TYPE B

DG Class 1.1D

Hazchem Code E

Packaging Method E8

EPG Number EXP1

IERG Number 02

## 15. REGULATORY INFORMATION

All constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

**Risk Phrase**

R40(3) Possible risk of irreversible effects.

**Safety Phrase**

S2 Keep out of reach of children. soap and water.

S24/25 Avoid contact with skin and eyes.

S28 After contact with skin, wash immediately with plenty of

S35 This material and its container must be disposed of in a safe way.

Poisons Schedule Not Scheduled

Hazard Category Harmful

## 16. OTHER INFORMATION

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**Contact Person/Point** Mt Thorley Technical Centre

Telephone: (02) 6574 2500

Fax: (02) 6574 6849

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.

...End Of MSDS...

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