



according to section 274 of the Australian Work Health and Safety Act (the WHS Act)

NX01011200_EN
 NX01011300_EN
 NX01011400_EN

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SECTION 1: Identification of the substance/mixture and supplier

1.1. Product identifier

Product name : Shock*Star TS

1.2. Other means of identification

Product code : NX01011200_EN (25-1000 ms), NX01011400_EN (1100-2000 ms), NX01011300_EN (2500-9000 ms)
 Synonyms : Shock*Star TS Non-Electric Detonator

1.3. Recommended use of the substance/mixutre and restrictions on use

1.2.1. Recommended use

Main use category : Professional use.
 Use of the substance/mixture : Borehole detonator assemblies for initiation of industrial explosives.

1.2.2. Restrictions on use

Statutory restrictions : Use is restricted to persons with the appropriate training, qualifications and licenses.

1.4. Supplier's details

Supplier's name : Austin Powder Australia Pty Ltd
 Supplier's address : L24, 300 Barangaroo Avenue, Sydney 2000 NSW
 Supplier's contact numbers : Phone +61 2 8067 8656

1.5. Emergency phone number

Emergency number : 1800 325 019

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

2.1.1 Classification according to Safe Work Australia

Not classified as hazardous

2.1.2 Classification according to the Australian Code for the Transport of Explosives by Road and Rail

Classified as dangerous goods : Explosives – division 1.4

2.2. GHS Label elements, including precautionary statements

2.2.1 Label elements

Signal word : Warning
 Hazard pictograms :



GHS01
 (Exploding Bomb)

Hazard statements : H204 - Fire or projection hazard.
 Precautionary statements - Prevention : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
 No smoking.
 P250 - Do not subject to grinding, shock, friction.
 P280 - Use protective gloves/protective clothing/eye protection.
 Precautionary statements - Response : P370+P380 - In case of fire: Evacuate area.
 P372 - Explosion risk in case of fire.
 P373 - DO NOT fight fire when fire reaches explosives.
 Precautionary statements - Storage : P401 - Store in a well-ventilated magazine licensed for Class 1.4B explosives in accordance with Australian Standard AS2187.1.

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Precautionary statements - Disposal : P501 - Dispose of contents/container in accordance with appropriate state and federal regulations. If in doubt, refer to supplier for information on disposal of surplus or expired product.

2.3. Other hazards which do not result in classification

Other hazards of individual components : In the detonator assembly, minimal quantities of hazardous substances are enclosed in a metal case that cannot be disassembled. These substances can be released only by detonation in the form of post-detonation reaction products.

SECTION 3: Composition/information on ingredients**3.1. Substances**

Not applicable

3.2. Mixtures

Comments : The non-electric detonator assembly contains ingredients which are hazardous to health or the environment however they are not present above their cut-off levels and therefore do not contribute to the classification of the product. The detonator assembly contains also chemicals that are not classified as hazardous and various other components, such as plastic tubing, plugs and other plastic components.

For 25-1000 ms delay detonator

Chemical Name	CAS Number	Proportion %
Pentaerythritol tetranitrate (PETN)	78-11-5	< 1
Octogen (HMX)	2691-41-0	< 0.5
Aluminium Powder	7429-90-5	< 0.1
Lead diazide, lead azide	13424-46-9	< 0.1
Zirconium powder (pyrophoric)	7440-67-7	< 0.1
Materials not classified as hazardous	-	to 100%

For 1100-2000 ms delay detonator

Chemical Name	CAS Number	Proportion %
Pentaerythritol tetranitrate (PETN)	78-11-5	< 1
Octogen (HMX)	2691-41-0	< 0.5
Aluminium Powder	7429-90-5	< 0.1
Orange lead (lead tetroxide)	1314-41-6	< 0.1
Lead diazide, lead azide	13424-46-9	< 0.1
Zirconium powder (pyrophoric)	7440-67-7	< 0.1
Materials not classified as hazardous	-	to 100%

For 2500-9000 ms delay detonator

Chemical Name	CAS Number	Proportion %
Pentaerythritol tetranitrate (PETN)	78-11-5	< 1
Octogen (HMX)	2691-41-0	< 0.5
Barium chromate	10294-40-3	< 0.5

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Manganese	7439-96-5	< 0.5
Aluminium Powder	7429-90-5	< 0.1
Orange lead (lead tetroxide)	1314-41-6	< 0.1
Zirconium powder (pyrophoric)	7440-67-7	< 0.1
Lead diazide, lead azide	13424-46-9	< 0.1
Materials not classified as hazardous	-	to 100%

SECTION 4: First-aid measures**4.1. Description of necessary first-aid measures**

First-aid measures general	: In the detonator assembly, the mixture is enclosed in a metal case that cannot be disassembled. If handled and stored in accordance with section 7 of this SDS, exposure to the mixture is extremely unlikely. Exposure to post-detonation reaction products while possible is unlikely if the product is handled correctly. Uncontrolled detonation may cause burns and injuries. In case of any suspected exposure, it is advisable to seek medical attention. For advice, contact a doctor or Poisons Information Centre (131 126).
First-aid measures after inhalation	: In case of exposure to post-detonation fumes, move the exposed person to fresh air. Keep the patient warm and at rest until recovered. If symptoms of respiratory system irritation such as heavy breathing or difficulty breathing persist, seek medical assistance.
First-aid measures after skin contact	: Not an expected route of exposure. In the unlikely event of an uncontrolled detonation there is a risk of burns, bruising and injuries due to shrapnel. Seek medical assistance.
First-aid measures after eye contact	: Not an expected route of exposure. In the unlikely event of an uncontrolled detonation, there is a risk of injury due to shrapnel.
First-aid measures after ingestion	: Not an expected route of exposure.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects after inhalation	: In case of inhalation of post-detonation reaction products, irritation of the respiratory system and headache may occur.
Symptoms/effects after skin contact	: In case of exposure to an uncontrolled detonation, injuries such as broken skin, bruising and burns may be visible.
Symptoms/effects after eye contact	: In case of exposure to an uncontrolled detonation, injuries such as broken skin, bruising and damage to eye may be visible.
Symptoms/effects after ingestion	: No information available.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Detonator assemblies are explosive and require careful handling by trained professionals. Uncontrolled detonation may cause injury, burns, bruising and broken skin.

Detonators contain lead azide – long-term exposure to post-detonation reaction products may result in lead poisoning. If symptoms of exposure appear during use of the product or in case of doubt, seek medical assistance.

SECTION 5: Fire-fighting measures**5.1. Extinguishing media**

Suitable extinguishing media	: DO NOT fight fires involving explosives. In case of a small fire where explosives are not directly involved, the explosive product may be carefully removed to a safe distance. In this case, coarse water spray (large quantities) is suitable.
Unsuitable extinguishing media	: Not applicable. DO NOT fight fires involving explosives.

5.2. Special hazards arising from the chemical

Explosion hazard	: Explosive product – risk of explosion from heat, fire, sparks or friction.
Hazardous combustion products	: Combustion products may include irritating or toxic fumes of lead, nitrogen or carbon.

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5.3. Advice protective actions for fire-fighters

- Precautions for fire-fighting : Explosive product – If the product is involved in a fire, maintain a safe distance. There is a chance of detonation if confined. Evacuate the area and allow the product to burn.
- HAZCHEM CODE : 1[Y]E

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures****6.1.1. For non-emergency personnel**

- Emergency procedures : Shut off all possible sources of ignition. Remove all non-essential personnel from the area. In case of a transport emergency, contact the police, local regulatory authorities and the supplier (1800 325 019) for notification and advice.

6.1.2. For emergency responders

- Emergency procedures : Wear appropriate personal protective equipment to prevent contact with eyes and skin. Ensure all possible sources of ignition have been shut off and that all non-essential personnel have been removed from the area. Recovered product must be placed in clean, approved labelled containers and sealed. All recovered product must be documented and accounted for. If necessary, contact the supplier (1800 325 019) for advice.

6.2. Environmental precautions

Ensure the spilled product is contained and prevented from entering any drains or waterways.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Collect the spilled product mechanically using non-metallic, anti-spark tools. Place the product in approved and properly labelled containers. Disposal of damaged product may be performed only by an authorized person. Disposal of contaminated material must be in accordance with section 13 of this SDS.

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

- Precautions for safe handling : Detonator assemblies are explosive - handle with great care. Keep away from heat, sparks, open flame, hot surfaces and sources of friction. Protect from electrostatic discharge. Do not eat, drink or smoke when using this product. Keep containers closed when not in use. Wash hands after use.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store in a cool, dry, well-ventilated magazine licensed for Class 1.4B explosives in accordance with Australian Standard AS2187.1. Do not store with other explosive products of incompatible hazard classification (eg. do not store detonators with blasting or high explosives). Protect packaging from physical damage. Inspect storage areas regularly for signs of damage or spills.

SECTION 8: Exposure controls/personal protection**8.1. Control parameters****8.1.1 Occupational exposure and biological limit values**

No occupational limits have been assigned for this specific mixture by Safe Work Australia. Available workplace exposure standards for product components as published by Safe Work Australia (Workplace Exposure Standards for Airborne Contaminants) are listed below:

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Aluminium (7429-90-5)	
Chemical name	Aluminium (metal dust)
TWA	10 mg/m ³

Barium chromate (10294-40-3)	
Chemical name	Chromium (VI) compounds (as Cr)
TWA	0.05 mg/m ³
Advisory carcinogen category	Carc.1A
Other advisory information	Sen (known to cause sensitisation)

Orange lead (1314-41-6)	
Local name	Lead, inorganic dusts & fumes (as Pb)
TWA	0.05 mg/m ³

Lead diazide, lead azide (13424-46-9)	
Local name	Lead, inorganic dusts & fumes (as Pb)
TWA	0.05 mg/m ³

Manganese (7439-96-5)	
Local name	Manganese, fume as Mn
TWA	1 mg/m ³
STEL	3 mg/m ³

Zirconium powder (pyrophoric) (7440-67-7)	
Local name	Zirconium compounds (as Zr)
TWA	5 mg/m ³
STEL	10 mg/m ³

8.1.2. Control banding

No information available.

8.2. Appropriate engineering controls

Use in well-ventilated areas. After detonation, ensure that the blast area has ample opportunity for any fumes or gases to escape before entry.

8.3. Individual protection measures, such as personal protective equipment (PPE)

In addition to the practice of good occupational hygiene, individual personal protective equipment should be used in conjunction with other control measures. The selection of personal protective equipment should be based on a documented, detailed risk assessment, considering the work situation, personal factors, handling methods and environmental factors.

- | | |
|------------------------|---|
| Eye protection | : Protective safety glasses. |
| Skin protection | : Impervious gloves, safety boots and clothing that does not accumulate static charge. |
| Respiratory protection | : If entering a blast area with dust or possible fumes, use a suitable mask with a dust filter. |

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Other information:

Do not eat, drink or smoke when using this product. Wash hands and exposed skin after work and before meals.

SECTION 9: Physical and chemical properties and safety characteristics**9.1. Information on basic physical and chemical properties**

Physical state	: Solid, article
Colour	: Aluminium detonator, plastic tubing of varying colour, plastic connector blocks of varying colour
Odour	: Odourless
Odour threshold	: Not available
Melting point	: 142 °C (PETN)
Freezing point	: Not available
Boiling point	: Not available
Flammability	: Explosive material – may detonate if exposed to flame
Explosion limits	: Not applicable
Lower explosive limit (LEL)	: Not applicable
Upper explosive limit (UEL)	: Not applicable
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: Not available
pH	: Not available
Viscosity, kinematic	: Not applicable
Solubility	: Insoluble in water
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: Not available
Density	: Not available
Relative density	: Not available
Relative vapour density at 20 °C	: Not applicable
Particle characteristics	: Not available

SECTION 10: Stability and reactivity**10.1. Reactivity**

Explosive product. Risk of detonation from impact, shock, friction or excessive heating.

10.2. Chemical stability

The product is stable under normal conditions of usage and storage if used and stored according to section 7 of this SDS.

10.3. Possibility of hazardous reactions

May detonate if heated to temperatures above 100°C. Malfunction is possible in cases of long-term exposure of aluminium detonator shell to an acidic environment. Hazardous polymerisation will not occur.

10.4. Conditions to avoid

May detonate with impact or friction. May detonate if exposed to open fire and radiant heat.

10.5. Incompatible materials

Incompatible with acids and alkalis. Incompatible with oxidising agents and combustible materials. Incompatible with heat and other sources of ignition.

10.6. Hazardous decomposition products

Hazardous decomposition products may include oxides of carbon, nitrogen, lead and aluminium.

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SECTION 11: Toxicological information**11.1. Information on likely routes of exposure**

The construction of this product is such that any chemical contamination or contact is extremely unlikely. If the product is handled in accordance with the advice and instructions provided on this SDS, no adverse health effects are expected.

11.1.1. Acute toxicity

There is no information available for the product. For constituent materials:

Pentaerythritol tetranitrate, PETN (78-11-5)	
LD50 oral / rat	1660 mg/kg (NIOSH – National Institute for Occupational Safety and Health)
Orange lead (1314-41-6)	
LD50 intraperitoneal / rat	630 mg/kg (NIOSH – National Institute for Occupational Safety and Health)
Lead diazide, lead azide (13424-46-9)	
LD intraperitoneal / rat	>150 mg/kg (NIOSH – National Institute for Occupational Safety and Health)

11.1.2. Likely routes of exposure

Effects that may be expected if the product is handled incorrectly and exposure occurs include:

Skin corrosion/irritation	: Contact with contents may result in irritation.
Serious eye damage/irritation	: Exposure to detonation may cause injury from shrapnel.
Respiratory or skin sensitisation	: Inhalation of products of detonation may cause respiratory irritation and difficulty breathing.
Germ cell mutagenicity	: No adverse health effects are known.
Carcinogenicity	: No adverse health effects are known.
Reproductive toxicity	: No adverse health effects are known.
STOT-single exposure	: No adverse health effects are known.
STOT-repeated exposure	: No adverse health effects are known for the assembled product. For constituent materials:

Barium chromate (10294-40-3)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
Orange lead (1314-41-6)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
Lead diazide, lead azide (13424-46-9)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : No adverse health effects are known. Not a likely route of exposure.

11.2. Other information

Chronic effects : Lead and its compounds are partly excreted by kidneys and partly deposited inside the body, especially in the bones. Long term exposure to lead may result in blood effects such as failure of haemoglobin production, encephalopathy and also paralysis of peripheral nerves. Lead and its compounds are known for their bioaccumulative effect and may lead to irreversible health damage, testicular damage leading to decreased reproductive capacity and may cause damage to the unborn child.

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SECTION 12: Ecological information**12.1. Toxicity**

The construction of this product is such that any chemical contamination or contact with the environment is extremely unlikely. There is no information available for the assembled product. For constituent materials:

Orange lead (1314-41-6)	
LC50 - Fish [1]	0.1 mg/l (SDS)
EC50 - Crustacea [1]	0.98 mg/l (SDS)
EC50 72h - Algae [1]	0.05 mg/l (SDS)

Hazardous to the aquatic environment, short-term (acute) : Very toxic to aquatic life.

Hazardous to the aquatic environment, long-term (chronic) : Toxic to aquatic life with long lasting effects.

12.2. Persistence and degradability

The construction of this product is such that any chemical contamination or contact with the environment is extremely unlikely. There is no information available for the assembled product. For constituent materials: orange lead is insoluble in water and may persist in the environment.

12.3. Bioaccumulative potential

The construction of this product is such that any chemical contamination or contact with the environment is extremely unlikely. There is no information available for the assembled product. For constituent materials:

Pentaerythritol tetranitrate, PETN (78-11-5)	
Bioconcentration factor (BCF REACH)	17 (SDS)
Partition coefficient n-octanol/water (Log K _{ow})	2.4 (SDS)

12.4. Mobility in soil

The construction of this product is such that any chemical contamination or contact with the environment is extremely unlikely. There is no information available for the assembled product. For constituent materials:

Pentaerythritol tetranitrate, PETN (78-11-5)	
Partition coefficient n-octanol/water (Log K _{oc})	2.81 (SDS)

12.7. Other adverse effects

Other adverse effects : No other adverse effects known.

SECTION 13: Disposal considerations**13.1. Disposal methods**

Waste disposal - product : Explosives must be disposed of by suitably qualified, licensed and authorised persons in accordance with appropriate local, state and federal regulations. Small quantities of damaged or deteriorated product may be included in a waste blast containing good explosives. Contact the supplier of the product for advice or instructions regarding disposal of large quantities of defective or damaged product. Detonation is the preferred method of disposal.

Waste disposal - packaging : Empty packages must be disposed of with care as explosive residue or product may be present. Approved waste contractors should be used for disposal of packaging.




SECTION 14: Transport information

In accordance with AEC / IMDG / IATA



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AEC	IMDG	IATA
14.1. UN number		
UN 0500	UN 0500	UN 0500
14.2. UN proper shipping name		
DETONATOR ASSEMBLIES, NON-ELECTRIC, for blasting	DETONATOR ASSEMBLIES, NON-ELECTRIC, for blasting	DETONATOR ASSEMBLIES, NON-ELECTRIC, for blasting
14.3. Transport hazard class(es)		
1.4S	1.4S	1.4S
		
14.4. Packing group		
Not applicable	Not applicable	Transport by air is prohibited.
14.5. Environmental hazards		
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Transport by air is prohibited.

14.6. Special precautions for user

No special precautions.

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations specific for the product in question****15.1.1. Australian regulations**

Classified as dangerous goods in accordance with the Australian Code of Practice for the Transport of Explosives by Road and Rail.
 Not classified as a hazardous chemical according to the criteria of Safe Work Australia.
 Not classified as a scheduled poison according to the Standard for the Uniform Scheduling of Drugs and Poisons. Not scheduled.
 All components of this product are listed on the Australian Inventory of Chemical Substances (AICS), or are exempt.

15.1.2. International agreements

This product is not subject to the Montreal Protocol on Substances that Deplete the Ozone Layer.
 This product is not subject to the Stockholm Convention on Persistent Organic Pollutants.
 This product is not subject to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

SECTION 16: Other information

16.1. Indication of changes			
Section	Changed item	Change	Comments
Document	Not applicable	First issue	07.04.2022

16.2. Abbreviations and acronyms	
AEC	Australian Explosives Code – Australian Code of Practice for the Transport of Explosives by Road and Rail
AICS	Australian Inventory of Chemical Substances
BCF	Bioconcentration factor

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EC50	The concentration at which a substance exerts half of its maximal response
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
K _{oc}	Organic carbon partition coefficient
K _{ow}	Octanol-water partition coefficient
LC50	Median lethal concentration
LD0	The dose at which no individuals are expected to die
LD50	Median lethal dose
mg/l	Milligrams per litre
mg/m ³	Milligrams per cubic metre
NIOSH	National Institute for Occupational Safety and Health
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
Sen	Sensitisation
STEL	Short term exposure limit
STOT	Specific target organ toxicity
TWA	Time weighted average

16.3. Key literature references and sources of data

Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code)

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Hazardous Chemical Information System: Safe Work Australia

International Maritime Dangerous Goods Code (IMDG Code)

National Drugs & Poisons Schedule Committee (NDPSC): Standard for the Uniform Scheduling of Medicines and Poisons

National Institute for Occupational Safety and Health

Preparation of Safety Data Sheets for Hazardous Chemicals: Safe Work Australia

Workplace Exposure Standards for Airborne Contaminants: Safe Work Australia

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

