



MATERIAL SAFETY DATA SHEET

SUPREME TUBE

LEAD INLINE

SAFETY • QUALITY • RELIABILITY

IDENTIFICATION OF THE MATERIAL AND SUPPLIER

| | |
|---|--|
| Product Name: | SUPREME TUBE |
| Packaging: | 1.4S |
| Recommended use of the chemical & restrictions of use: | Initiating System for Explosives Charge |
| Supplier: | Solar Mining Services (Middelburg) 12 April Street Extension 33 Middelburg Mpumalanga South Africa |
| Supplier: | Solar Mining Services (Sandton) Building A, Upper Grayston Office Park 150 Linden Road Sandton Johannesburg Telephone number: +27 (0) 11 883 1110 Fax: +27 (0) 86 205 4048 Web: www.solarminingservices.com Email: info@solarminingservices.co.za |

HAZARDS IDENTIFICATION

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

Classification of the substance or mixture:

Explosives - Division 1.1



MATERIAL SAFETY DATA SHEET

Hazard Statement(s):

H201 Explosive; mass explosion hazard.

Precautionary Statement(s):

Prevention:

P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P240: Ground/bond container and receiving equipment.

P250: Do not subject to grinding/shock/friction/impact/electrical energy from extraneous source (lighting, static electricity, stray currents, galvanic electricity or electromagnetic radiation) or any form of heating.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

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.

Storage:

P401: Store in accordance with Hazardous Substances (Class 1 to 5) Control Regulations 2001.

Disposal:

P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

Product Name: SUPREME TUBE (1.4S PACKAGING)

Substance No: 000023037401

Poisons Schedule(SUSMP):

None allocated.

COMPOSITION/INFORMATION ON INGREDIENTS

Product Description:

Hollow plastic three layer tube (normally orange) with dusty inner coating of HMX and Aluminum powder.

| Component | CAS No. | Proportion | Risk Phrases |
|---|-----------|------------|--------------|
| Cyclotetramethylenetetranitramine (HMX) | 2691-41-0 | <1% | - |
| Aluminium Powder (Stabilized) | 7429-90-5 | <1% | H261, H228 |

FIRST AID MEASURES

Construction of the product normally prevents contact with explosive component, however, in the event of exposure: For advice, contact a Poisons Information Centre or a doctor.

Inhalation:

If inner coating inhaled, remove from contaminated area. Apply artificial respiration if not breathing. Seek medical advice if effects persist.

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.

Indication of immediate medical attention and special treatment needed:

Treat symptomatically. Detonator assemblies are explosive - handle with care. Explosive material containing lead. Long term exposure to detonation fumes may result in lead poisoning. Shrapnel from detonation may cause burns, wounds and bruises - treat symptomatically.

FIRE FIGHTING MEASURES

Suitable Extinguishing Media:

Do not fight fires involving explosives.

Hazchem or Emergency Action Code: E

Specific hazards arising from the substance or mixture:

Explosive material. Avoid all ignition sources. Risk of explosion by shock, friction, fire or other sources of ignition. On burning will emit toxic fumes, including those of oxides of carbon, oxides of nitrogen and lead.

Precautions for fire fighters and special protective equipment:

Explosive. In case of fire where shock tube is not involved, carefully remove the Shock tube to a safe distance, otherwise evacuate area immediately and allow to burn. On burning will emit toxic fumes. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion.

ACCIDENTAL RELEASE MEASURES

Emergency procedures/Environmental precautions:

Shut off all possible sources of ignition. Clear area of all unprotected personnel. Wear protective equipment to prevent skin and eye contact. If contamination of sewers or waterways has occurred advise local emergency services.

Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:

Collect and seal in properly labeled containers. In the case of a transport accident, notify the Police, Explosives Inspector and SMS.

HANDLING AND STORAGE

Conditions for safe storage:

Store material in a well-ventilated magazine suitably licensed for Class 1.4S explosives. Dangerous substance for transport. Refer to relevant regulations for storage and transport requirements. Explosives should not be normally carried on the same vehicle with dangerous goods of other classes, however, exemption may apply. Store in a clean dry magazine suitably licenced for IMDG Class 1.4S explosives. Handle with care. Do NOT subject the material to impact, friction between hard surfaces nor to any form of heating. Keep out of reach of children

Precautions for safe handling:

Detonators are explosive - handle with care. Do NOT subject the material to impact, friction between hard surfaces nor to any form of heating. Take precautionary measures against static discharges. Keep out of reach of children.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits:

No value assigned for this specific material by OHSA. However, Workplace Exposure Standard(s) for constituent(s):

Aluminium (metal dust): 8hr TWA = 15 mg/m³

As published by NOHSC Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

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.

Biological Exposure Indices:

Inorganic lead.

Engineering Measures:

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

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection:

No special personal protective equipment required. Containment of charge prevents

Skin Protection:

Long sleeved clothing. Impervious gloves.

Respiratory protection:

Use a NIOSH-approved respirator or equivalent during post-detonation clean-up operations.

Hygiene Measures:

Handle in accordance with good industrial hygiene and safety practice.

Individual protection measures, such as Personal Protective Equipment (PPE):

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.

SMS Personal Protection Guide: - OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES.



Containment of charge prevents exposure. Wear protective clothes, gloves and eye protection when handling. Wash hands and exposed skin before meals and after work. DO NOT eat, drink or smoke in lead contaminated areas. handling. Wash hands and exposed skin before meals and after work.

PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|--------------------------------|
| Appearance | Article |
| Colour | Orange coloured opaque tubing. |
| Odour | None (odourless) |
| Solubility | Insoluble in water |
| Specific Gravity | N Av |
| Relative Vapour Density (air=1) | N App |
| Vapour Pressure (20 °C) | N Av |
| Flash Point (°C) | N Av |
| Flammability Limits (%): | N Av |
| Auto ignition Temperature (°C) | N Av |
| % Volatile by Volume | Nil |
| Solubility in water (g/L) | N Av |
| Melting Point/Range | HMX decomposes at 278 deg.C |
| Decomposition Point (°C) | N Av |
| Sublimation Point (°C) | N App |
| pH: | N App |
| Viscosity | N App |
| Evaporation Rate | N App |

STABILITY AND REACTIVITY

Chemical stability:

Detonation may occur from impact, friction or excessive heating.

Possibility of hazardous reactions:

Explosive material. Explosion may result due to shock, friction, fire and other sources of ignition. Explosion creates the potential for shrapnel. Hazardous polymerisation will not occur.

Conditions to avoid:

Avoid exposure to heat. Avoid exposure to shock, friction, fire and other sources of ignition. Avoid build-up of static electricity. Store away from explosive products.

Incompatible materials:

Incompatible with oxidising agents. Incompatible with other chemicals. Incompatible with heat and hot surfaces. Incompatible with combustible materials.

Hazardous decomposition products:

Oxides of carbon. Oxides of nitrogen. Oxides of lead. Oxides of aluminium. Lead fume.

Hazardous reactions:

Explosive material. Explosion may result due to shock, friction, fire and other sources of ignition. Hazardous polymerisation will not occur.

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 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.

Long Term Effects:

Available evidence from animal studies indicate that repeated or prolonged exposure to a component of this material could result in effects on the blood system, central nervous system, bone marrow, eye, kidneys and liver. Repeated or prolonged skin contact may cause dermatitis.

Acute toxicity:

No LD50 data available for the product.

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 initiation occurs 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.



MATERIAL SAFETY DATA SHEET

ECOLOGICAL INFORMATION

Eco toxicity:

Avoid contaminating waterways.

Aquatic toxicity:

Expected to be persistent in the environment. May cause bioaccumulation.

DISPOSAL CONSIDERATIONS

Disposal methods:

Refer to Waste Management Authority. Dispose of contents/container in accordance with local/regional/national/international regulations. For small quantities: Cut off shock tube and place in a blast hole and explode during blasting. Large quantities should be returned to SMS or be disposed of in conjunction with the relevant State Dangerous Goods Branch.

Waste Disposal Method:

Burn under supervision of an expert at an approved explosive burning ground or destroy by detonation in boreholes, in accordance with applicable local, provincial and federal regulations. Call upon the services of an SMS Technical Representative.

Contaminated Packaging:

No information available.

TRANSPORT INFORMATION

Road and Rail Transport:

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

| | |
|-----------------------------|--|
| UN No | 0349 |
| Class-primary | 1.4 S Explosive |
| Proper Shipping Name | ARTICLES, EXPLOSIVE N.O.S |
| Hazchem Code | E |
| 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: 0349 |
| Class-primary | 1.4 S Explosive |
| Proper Shipping Name | DE |
| IMDG EMS Fire | F-B |
| IMDG EMS Spill | S-X |
| Air Transport | TRANSPORT PROHIBITED under the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air in passenger aircraft and cargo aircraft. |



REGULATORY INFORMATION

Classification:

This material is hazardous according to criteria of OHSA; HAZARDOUS SUBSTANCE.

Classification of the substance or mixture:

Explosives - Division 1.1

Hazard Statement(s):

H201: Explosive; mass explosion hazard.

Poisons Schedule:

None allocated.



MATERIAL SAFETY DATA SHEET

OTHER INFORMATION

This Material Safety Data Sheet has been prepared by Solar MS.

Reason(s) for Issue:

Revised MSDS for Solar MS South Africa

This MSDS 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 Solar MS 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 Solar MS representative or Solar MS at the contact details on page 1.

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