

SOLAR CORD

Detonating cord

Safety • Quality • Reliability



COMPANY DETAILS

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PRODUCT AND COMPANY IDENTIFICATION

Trading Name: SOLAR CORD

Chemical Family: Detonating Cord for initiating charges

Chemical Name: Detonating Cord

Synonyms: SOLAR CORD (Detonating Cord) – SOLAR CORD A, SOLAR CORD I, SOLAR CORD II, SOLAR CORD III, SOLAR CORD IV, SOLAR CORD V, SOLAR CORD VI

Chemical abstract number: CAS No. 78-11-5, 118-96-7

NIOSH no: Not Available

HAZCHEM code: E

UN number: 0065

COMPOSITION / INFORMATION ON INGREDIENTS

Product Description:

SOLAR CORD provides quick, safe and convenient means of simultaneously initiation of any number of independent or inter-related charges. SOLAR CORDs are strong, flexible, lightweight, comprising of an explosive core of PETN contained within a spiral of tape plastic sheathing and natural synthetic fibres. SOLAR CORDs are available in a variety of PETN charge weights designed for different applications.

Component:	CAS No.	Proportion:	Risk Phrases:
Pentaerythritol tetra nitrate (PETN)	78-11-5	10-80%	R3
Trinitrotoluene (TNT)	118-96-7	90-20%	R3

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: Class 1.1 D

Hazard Statement:

H201: Explosives: mass explosion hazard

Precautionary Statement(s):

Prevention:

P210: Keep away from heat/sparks/open flames/ hot surfaces.
No smoking
P240: Ground/bond container & receiving equipment
P250: Do not subject to grinding/shock/friction/impact/electrical energy from extraneous (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
P372: Explosion risk in case of fire
P373: DO NOT fight fire when fire reaches explosives

Storage:

P401: Store in accordance with hazardous substance (class 1 to 5) control regulations 2001

Disposal:

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

Product Name: SOLAR CORD (1.1D PACKAGING)

Poisons Schedule:

None None allocated.

EXPLOSIVES & ACCESSORIES**FIRST AID MEASURES**

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

Inhalation:

Remove victim from area of 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. 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, do NOT induce vomiting. Give a glass of water. Get to a doctor or hospital quickly.

Medical attention and special treatment:

Treat symptomatically. Treat as for exposure to nitrates. May cause methemoglobinemia. PETN is a vasodilator. Maintain blood pressure by fluid administration. (1)

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
5. 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.
6. Bed rest is required for methaemoglobin levels in excess of 40%.
7. Continue to monitor and give oxygen for at least two hours after treatment with methylene blue.
8. Consider transfer to centre where haemoperfusion can be performed to remove the nitrates from the blood if the condition of the patient is unstable.
9. 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 the inflammatory changes of bronchiolitis fibrosa obliterans. Liver and kidney damage are possible complications. Effects may be delayed.

FIRE FIGHTING MEASURES**Hazards from combustion products:**

On burning under confined or semi-confined conditions, some oxides of nitrogen and/or carbon will be present. Brown fumes indicate the presence of toxic oxides of nitrogen.

EXPLOSIVES & ACCESSORIES**Precautions for fire fighters and special protective equipment:**

Explosive material. Avoid all ignition sources. Risk of explosion by shock, friction, fire or other sources of ignition. In case of small fire where the actual explosive is not involved, carefully remove explosive to a safe distance, otherwise evacuate area immediately and allow to burn. Do NOT fight fire.

Hazchem Code: E

ACCIDENTAL RELEASE MEASURES**Emergency procedures:**

Clear area of all unprotected personnel. Shut off all possible sources of ignition. Handle with care. In the case of a transport accident notify the Police, Explosives Inspector and SMS

Methods for containment:

Collect loose or spilled solid material for storage or transport to secured magazine.

Methods for cleaning up:

Review fire and explosion hazards before proceeding with clean up. Remove and protect ignition sources. Wear protective equipment during clean up. Mop-up water using non-sparking tools. It is suggested that only personnel trained in Emergency Response should respond. Verify complete account of product(s). Notify authorities and follow applicable spill reporting requirements.

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.

Methods and materials for containment and cleaning up:

Collect and seal in properly labelled 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 1.1D Explosives. Store away from incompatible materials described in Section 10. Store away from sources of heat or ignition.

Precautions for safe handling:

Handle with care. Avoid skin and eye contact. Do NOT subject the material to impact, friction between hard surfaces nor to any form of heating. Protect ends of cords from contact with moisture, and oil.

EXPOSURE CONTROLS/PERSONAL PROTECTION**Occupational Exposure Limits:**

No value assigned for this specific material by the Occupational Health and Safety Act.

Engineering Measures:

Natural ventilation should be adequate under normal use conditions.

EXPLOSIVES & ACCESSORIES**Personal Protective Equipment****Eye/Face Protection:**

Personal Protection Guide No. 1, 1998: A - OVERALLS, SAFETY SHOES.

Wear standard safety equipment - overalls and safety shoes. Always wash hands before smoking, eating, drinking or using the toilet.

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, Flexible cord with a white powder
Colour	Outer coverings of textiles or plastics of various colours
Odour	None (odourless)
Solubility	Insoluble in water
Specific Gravity	1.77 @ 20°C (for PETN)
% Volatile by Volume	0
Melting Point/Range	141.3°C (for PETN)
Flash Point (°C)	Not applicable.
Decomposition Point (°C)	>150 (for PETN)

STABILITY AND REACTIVITY**Chemical stability:**

Detonation may occur from heavy impact or excessive heating, particularly under confinement.

Conditions to avoid:

Avoid exposure to heat. Avoid exposure to shock, friction, fire and other sources of ignition. Avoid build-up of static

EXPLOSIVES & ACCESSORIES

electricity. Store away from explosive products.

Incompatible materials:

Incompatible with combustible materials. PETN is incompatible with oxidising agents, reducing agents, acids and alkalis.

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.

Hazardous decomposition products:

Oxides of carbon. Oxides of nitrogen.

Hazardous reactions:

Explosive material. 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:

Swallowing can result in nausea, vomiting, diarrhoea, and abdominal pain. Other symptoms include headaches and dizziness.

Eye contact:

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

Skin contact:

Repeated or prolonged skin contact with PETN may lead to irritation.

Inhalation:

Not a likely route of exposure due to the physical form of the product. Inhalation of PETN may result in respiratory irritation.

Long Term Effects:

No information available for the product. 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. (1) Blood effects include lowered blood pressure and methaemoglobinaemia. (1)

Toxicological Data:

No LD50 data available for the product. For the constituent PETN (2) Oral LD50 (rat): 1660 mg/kg

ECOLOGICAL INFORMATION**Eco toxicity:**

Avoid contaminating waterways.

DISPOSAL CONSIDERATIONS

Disposal methods:

Refer to Waste Management Authority. Dispose of material through a licensed waste contractor. 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 SMS.

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:

Class-primary

Proper Shipping Name

Hazchem Code

Marine Transport

0065

1.1 D Explosive

CORD, DETONATING

E

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

CORD, DETONATING

F-B

S-X

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



Proper Shipping Name

IMDG EMS Fire

IMDG EMS Spill

Air Transport

REGULATORY INFORMATION

Classification:

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

EXPLOSIVES & ACCESSORIES

Risk Phrase(s):

R2: Risk of explosion by shock, friction, fire or other sources of ignition.

Safety Phrase(s):

S16: Keep away from sources of ignition - No smoking.

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

Poisons Schedule:

None allocated.

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 used, each user must, prior to usage, 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.