

Material Safety Data Sheet

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Supersedes
New

SECTION I - PRODUCT IDENTIFICATION

Trade Name(s): GEOSEIS[®] SURFACE DETONATOR

Product Class: Detonators, Electric

Product Appearance & Odor: Metal cylinder with varying length of attached plastic coated wires.

DOT Hazard Shipping Description: Detonators, Electric 1.1B UN0030 II
Or
Detonators, Electric 1.4B UN0255 II
Or
Detonators, Electric 1.4S UN0456 II

NFPA Hazard Classification: Not Applicable (See Section IV - Special Fire Fighting Procedures)

SECTION II - HAZARDOUS INGREDIENTS

Ingredients	CAS#	EXPOSURE LIMITS	
		OSHA PEL-TWA	ACGIH TLV-TWA
Lead Azide	13424-46-9	0.05 mg (Pb)/m ³	0.05 mg (Pb)/m ³
Lead Trinitroresorcinate	15245-44-0	0.05 mg (Pb)/m ³	0.05 mg (Pb)/m ³
Pentaerythritol Tetranitrate (PETN)	78-11-5	None ¹	None ²
Lead Picrate	----	0.05 mg (Pb)/m ³	0.05 mg (Pb)/m ³
Potassium Permanganate	7722-64-7	None ¹	0.2 mg(Mn)/m ³
Antimony	7440-36-0	0.5 mg(Sb)/ m ³	0.5 mg(Sb)/m ³
Silicon	7440-21-3	15 mg / m ³ (total dust) 5 mg / m ³ (respirable fraction)	10 mg / m ³

¹ Use limit for particulates not otherwise regulated (PNOR): Total dust, 15 mg/m³; respirable fraction, 5 mg/m³.

² Use limit for particulates not otherwise classified (PNOC): Inhalable particulate, 10 mg/m³; respirable part., 3 mg/m³.

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in de minimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

SECTION III - PHYSICAL DATA

Boiling Point: Not Applicable
Vapor Density: Not Applicable
Percent Volatile by Volume: Not Applicable

Vapor Pressure: Not Applicable
Density: Not Applicable
Solubility in Water: Not Applicable

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SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable

Flammable Limits: Not Applicable

Extinguishing Media: None

Special Fire Fighting Procedures: Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions.

Unusual Fire and Explosion Hazards: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure

This is a packaged product that will not result in exposure to the explosive material under normal conditions of use. Exposure concerns are primarily with post-detonation reaction products, particularly heavy metal compounds.

Eyes: No exposure to chemical hazards anticipated with normal handling procedures. Particulates in the eye may cause irritation, redness and tearing.

Skin: No exposure to chemical hazards anticipated with normal handling procedures.

Ingestion: No exposure to chemical hazards anticipated with normal handling procedures.

Inhalation: Not a likely route of exposure.

Systemic or Other Effects: None anticipated with normal handling procedures. Repeated inhalation or ingestion of post-detonation reaction products may lead to systemic effects such as respiratory tract irritation, ringing of the ears, dizziness, elevated blood pressure, blurred vision and tremors. Heavy metal (lead) poisoning can occur.

Carcinogenicity: ACGIH classifies Lead as a "Suspected Human Carcinogen". NTP, OSHA, and IARC consider components contained in this detonator carcinogenic.

Emergency and First Aid Procedures

Eyes: Irrigate with running water for at least fifteen minutes. If irritation persists, seek medical attention.

Skin: Wash with soap and water.

Ingestion: Seek medical attention.

Inhalation: Not applicable.

Special Considerations: None

SECTION VI - REACTIVITY DATA

Stability: Stable under normal conditions, may explode when subjected to fire, heat, supersonic shock, high-energy projectile impact, friction, electric currents, electrostatic or radiofrequency energy.

Conditions to Avoid: Keep away from heat, flame, ignition sources, strong shock and electrical impulse. Do not attempt to disassemble. Do not expose to temperatures exceeding 75°C (167°F)

Materials to Avoid (Incompatibility): Corrosives (acids and bases)

Hazardous Decomposition Products: Carbon Monoxide (CO), Nitrous Oxides (NO_x), Lead (Pb) fumes and various oxides and complex oxides of metals.

Hazardous Polymerization: Will not occur.

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SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled: Protect from all ignition sources. In case of fire evacuate area not less than 2,500 feet in all directions. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. Follow applicable Federal, State, and local spill reporting requirements.

Waste Disposal Method: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: Not required for normal handling.

Respiratory Protection: None normally required.

Protective Clothing: Cotton clothing is suggested.

Eye Protection: Safety glasses are recommended.

Other Precautions Required: None.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store in cool, dry, well-ventilated location. Store in compliance with Federal, State, and local regulations. Keep away from heat, flame, ignition sources, strong shock, and electrical impulses.

Precautions to be taken during use: Avoid breathing the fumes or gases from detonation of explosives. Use accepted safe industry practices when using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death.

Other Precautions: It is recommended that users of explosive materials be familiar with the Institute of Makers of Explosives Safety Library Publications.

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SECTION X - SPECIAL INFORMATION

This product contains the following substances that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

<u>Chemical Name</u>	<u>CAS Number</u> (Use Toxic Chemical Category Code)	<u>% By Weight</u>
Lead Compounds	N420	0.57%

Amount of Lead in Detonator*			
Product	Pb compounds in detonator [grams]	Pb compounds in detonator [Wt.%]	% Pb in lead compounds [Wt. %]
Geoseis Surface Det	0.180	0.57% (18.0% of NEQ)	62 %

*Applies to only the detonator (source of lead). Do not use case weight or weight of any other component.

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