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SAFETY DATA SHEET

Section 1. Identification

Product Name: Tungsten hexacarbonyl
Product Type: Solid
CAS Number: 14040-11-0
Product Number: W0110
Recommended Use: Laboratory chemicals, synthesis of substances.
Product Manufacturer: Ereztech LLC
11555 Medlock Bridge Road, Suite 100
Johns Creek, GA 30097

Product Information: (888) 658-1221
In Case of an Emergency: CHEMTREC: 1-800-424-9300 (USA);
+1 703-527-3887 (International); CCN836180
*** Contact manufacturer for all non-emergency calls.

Section 2. Hazards Identification

Appearance/Odor: White crystalline powder, odorless.
Classification: ACUTE TOXICITY, ORAL – Category 3, H301
ACUTE TOXICITY, DERMAL – Category 3, H311
ACUTE TOXICITY, INHALATION – Category 3, H331

GHS Label Elements
Hazard Pictograms:

Signal Word: DANGER
Hazard Statements: H301 + H311 + H331: Toxic if swallowed, in contact with skin or if inhaled.

Precautionary Statements
Prevention:
P261: Avoid breathing dusts/aerosols/vapors/gases.
P262: Do not get in eyes, on skin, or on clothing.
P264: Wash hands and exposed skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or with adequate ventilation.

Section 2. Hazards Identification

Prevention (cont.): P280: Wear protective gloves/ protective clothing.

Response:
P301 + P316: IF SWALLOWED: Get emergency medical help immediately.
P302 + P352: IF ON SKIN: Wash with plenty of water.
P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316: Get emergency medical help immediately.
P330: Rinse mouth.
P361 + P364: Take of immediately all contaminated clothing and wash it before reuse.

Storage:
P403 + P233: Store in a well ventilated area. Keep container tightly closed.
P405: Store locked up.

Disposal: P501: Dispose of contents/container in accordance with federal, state and local regulations.

OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

General: None.

Hazards Not Otherwise Classified (HNOC): None identified.

Section 3. Composition/Information on Ingredients

Substance Type: Mono-constituent.

Synonyms: Tungsten carbonyl; Hexacarbonylwolfram; $W(CO)_6$.

Formula: C_6O_6W

Molecular Weight: 351.90 g/mol.

EC-No. : 237-880-2

Component Name	%	CAS Number
Tungsten hexacarbonyl	≥ 99	14040-11-0

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First Aid Measures

Description of Necessary First Aid Measures

General Advice: Move out of dangerous area. Show this safety data sheet to the doctor in attendance.

Section 4. First Aid Measures

General Advice: (cont.) If unconscious, place in recovery position and get medical help immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Eye Contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses if easy to do. Continue rinsing. Get medical help if irritation develops and persists, if symptoms develop or if you feel unwell.

Skin Contact: Take off contaminated clothing and shoes immediately. Wash off contaminated skin with plenty of water. Get emergency medical help immediately.

Inhalation: Get emergency medical help immediately. Rescuer should wear a mask or self-contained breathing apparatus if it is suspected that fumes or gases are still present. Remove person to fresh air and keep comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Do not use the mouth-to-mouth method of resuscitation if victim ingested or inhaled the product; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical devices.

Ingestion: Get emergency medical help immediately. Rinse mouth, and then give water to drink (two glasses at most). Do NOT induce vomiting. Remove dentures if any. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If person is not breathing, if breathing is irregular or if respiratory arrest occurs, see the “Inhalation” first aid measures noted above.

In exceptional cases where medical care will not be available within one hour of ingestion, induce vomiting (only in persons who are fully awake and fully conscious) then administer activated charcoal (20 – 40 g in 10% slurry) and get medical help as quickly as possible.

Most Important Symptoms/Effects, Acute And Delayed Potential Acute Health Effects

Eye Contact: The acute eye contact symptoms of this product have not been determined.

Skin Contact: Product is toxic in contact with skin and may cause skin irritation. The acute symptoms of dermal contact of this product have not been determined.

Inhalation: Product is toxic if inhaled and may cause respiratory irritation. The acute symptoms of inhalation of this product have not been determined.

Ingestion: Product is toxic if swallowed. The acute symptoms of ingestion of this product have not been determined.

Indication of Immediate Medical Attention and Special Treatment Needed, If Necessary

Notes to Physician: Treat symptomatically. Contact a poison treatment specialist immediately if large quantities have been ingested or inhaled.

Section 4. First Aid Measures

Notes to Physician (cont.): Tungsten carbonyl is reported to have a weakly fibrinogenic and general toxicity. Symptoms may be delayed and there may be chronic effects from short and long-term exposure.

Specific Treatments: No specific treatment.

Protection of First Responders: No action taken shall be taken involving any personal risk without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See Toxicological Information (Section 11)

Section 5. Fire Fighting Measures

General Hazards: None identified.

Suitable Extinguishing Media: Use extinguishing measures and media that are appropriate to the local circumstances and the surrounding environment.

Unsuitable Extinguishing Media: None identified.

Unusual Fire and Explosion Hazards: None identified.

Product of Combustion: Decomposition products include carbon oxides (CO_X) and tungsten oxides. Thermal decomposition can lead to the production of irritating/toxic gases and vapors.

Protection of Firefighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Avoid contact with skin or eyes and the formation and inhalation of dusts, aerosols, vapors and gases.

To reduce the possibility of explosion, use a water spray or fog to reduce direct vapors and to cool unopened containers.

Fire-fighters should wear appropriate protection equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in a positive pressure mode.

Additional Information: Prevent fire extinguishing water from contaminating surface waters or ground water systems.

Section 6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

For Non-Emergency Personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Prevent unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material.

Section 6. Accidental Release Measures

For Non-Emergency Personnel: (cont.)

Avoid the formation and inhalation of dusts, aerosols, vapors, and gases. Provide adequate ventilation. Wear respiratory protection. Put on appropriate personal protective equipment.

For Emergency Responders:

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For Non-Emergency Personnel".

Environmental Precautions:

Do not allow dispersal of spilled material and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for Containment

General:

Move containers from spill area if safe to do so. Avoid the formation and inhalation of dusts, aerosols, vapors and gases. Dispose of collected spillage in accordance with federal, state and local regulations. Contaminated binding material may pose the same hazard as the spilled product.

Small Spill:

Collect spillage with a dry, binding material (e.g. dry sand, vermiculite or diatomaceous earth) and place in dry, sealed container for disposal.

Large Spill:

Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with a dry, binding material (e.g. dry sand, vermiculite or diatomaceous earth) and place in dry, sealed container for disposal.

Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and Storage

Precautions:

Avoid formation and inhalation of dusts, aerosols, vapors and gases. Keep away from incompatible materials. Keep container tightly sealed. Avoid contact with skin, eyes and clothing. Do not ingest. Avoid prolonged exposure. Ensure adequate ventilation.

Protective Measures:

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Keep in the original container kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Section 7. Handling and Storage

General Occupational Hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Safe Storage Conditions: Store in original container protected from direct sunlight in a dry and well-ventilated area, away from incompatible materials and food and drink. Keep container tightly closed and sealed until ready for use. Store locked up.

Section 8. Exposure Controls/Personal Protection

Introductory Remarks: These recommendations provide general guidance for handling this product. Because work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and conduct regular repairs. Waste from these procedures should be handled in accordance with Section 13.

Occupational Exposure Limits

Components	CAS-No.	List	Type	Value
Tungsten hexacarbonyl	14040-11-0	ACGIH	TLV	3.0 mg/m^3 W TWA 10.0 mg/m^3 W STEL
		CA Title 8	Article 107	5.0 mg/m^3 PEL 10.0 mg/m^3 STEL
		NIOSH	REL	5 mg/m^3 W TWA 10 mg/m^3 W STEL
		OSHA	PEL	5 mg/m^3 W TWA (vacated) 10 mg/m^3 W STEL (vacated)

Engineering Controls: Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Provide an eyewash/shower station.

Environmental Exposure Controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Section 8. Exposure Controls/Personal Protection

Individual Protection Measures

Hygiene Measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Remove all soiled and contaminated clothing immediately. Avoid the formation and inhalation of dusts, aerosols, gases and vapors. Avoid contact with eyes and skin. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/Face Protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to dusts and aerosols. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles, faceshield (8-inch minimum). Refer to 29 CFR 1910.133, ANSI Z87.1, or European Standard EN166.

Skin Protection

Hand Protection:

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Chemical-resistant gloves.

Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full contact material: Neoprene or nitrile rubber.

Other Skin Protection:

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure Controls/Personal Protection

Respiratory Protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Section 9. Physical and Chemical Properties

Physical State:	Crystalline solid.
Color:	White.
Odor:	Odorless.
Odor Threshold:	No data available.
pH:	No data available.
Melting Point:	150 °C (302 °F) – lit.
Boiling Point:	175 °C (347 °F) @ 760 mmHg.
Flash Point:	200 °C (392 °F).
Auto-Ignition Temperature:	300 °C (572 °F).
Flammability:	Not flammable.
Relative Density:	2.65 g/cm^3 @ 25 °C (77 °F) - lit.
Vapor Pressure:	1.4 mmHg @ 67 °C (153 °F).
Vapor Density:	12.1 @ 20 °C (68 °F).
Water Solubility:	Insoluble.
Evaporation Rate:	Not applicable.

Section 10. Stability and Reactivity

Reactivity:	No specific data available.
Chemical Stability:	Stable under recommended storage conditions.
Conditions to Avoid:	No additional information available.
Incompatible Materials:	Strong oxidizing agents, halogens.
Hazardous Decomposition Products:	Hazardous decomposition products formed under fire conditions: irritating/toxic fumes and gases, carbon oxides (CO_X) and tungsten oxides. In the event of a fire: see Section 5.

Section 10. Stability and Reactivity

Possibility of Hazardous Reactions: Under normal conditions of storage and use, hazardous reactions are not expected to occur. Hazardous reactions or instability may occur under certain conditions of storage or use.

Section 11. Toxicological Information

Information on Toxicological Effects

Acute Toxicity

Component	CAS No	Result	Species	Dose	Exposure
Tungsten hexacarbonyl	14040-11-0	LD50 Oral	ATE	100.1 mg/kg	-
		LD50 Dermal	ATE	300.1 mg/kg	-
		LC50 Inhalation	ATE	0.51 mg/l	4h - dust

Irritation/Corrosion: No specific data available. Product may cause skin and eye irritation.

Sensitization: No specific data available.

Germ Cell Mutagenicity: No specific data available.

Carcinogenicity

ACGIH No component of this product present at levels greater than 0.1% is identified as probable, possible or confirmed human carcinogen by ACGIH.

IARC No component of this product present at levels greater than 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP No component of this product present at levels greater than 0.1% is identified as probable, possible or confirmed human carcinogen by NTP.

OSHA No component of this product present at levels greater than 0.1% is identified as probable, possible or confirmed human carcinogen by OSHA.

Reproductive Toxicity: No specific data available.

Teratogenicity: No specific data available.

Specific Target Organ Toxicity: (Single Exposure) Product may cause respiratory irritation.

Specific Target Organ Toxicity: (Repeated Exposure) Chronic exposure to tungsten compounds may result in permanent lung damage.

Aspiration Hazard: No specific data available.

Section 11. Toxicological Information

Information on the Likely Routes of Exposure: Common routes of exposure: inhalation (failure to prevent dust formation), dermal (failure to use skin protection), eye (failure to use safety eyewear). Less common: ingestion (failure to employ recommended hygiene measures (e.g. smoking after handling product without washing hands or using hand protection).

Additional Information: Tungsten carbonyl is reported to have a weakly fibrinogenic effect and general toxicity.

To the best of our knowledge, the chemical, physical and toxicological properties of this product have not been thoroughly investigated.

Section 12. Ecological Information

Ecotoxicity: The impact of this product on the environment has not been tested.

Numerical Measures of Toxicity: No specific data available.

Persistence and Degradability

Biodegradability: No specific data available.

Bioaccumulative Potential: No specific data available.

Mobility in Soil: Product is not expected to be mobile based on its low water solubility.

Results of PBT and vPvB Assessment: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

Endocrine Disrupting Properties: No specific data available.

Other Adverse Effects: This substance may be hazardous to the environment. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13. Disposal Considerations

Waste Treatment Methods

Product: Dispose of in accordance with local, state, and federal regulations. Refer to 40 CFR 260-299 for complete waste disposal regulations. Consult your local, state, or federal agency before disposing of any chemicals.

Contaminated Packaging: Empty containers retain product residue (dusts, aerosols, gases) and can be dangerous. Dispose of as unused product.

Section 14. Transport Information

	DOT	IMDG	IATA
UN Number	UN3466	UN3466	UN3466
UN Proper Shipping Name	Metal carbonyls, solid, n.o.s. (tungsten hexacarbonyl)	METAL CARBONYLS, SOLID, N.O.S. (tungsten hexacarbonyl)	Metal carbonyls, solid, n.o.s. (tungsten hexacarbonyl)
Transport Hazard Classes	6.1	6.1	6.1
Packing Group	III	III	III
Environmental Hazards	-	-	-
Additional Information	-	EMS-No: F-A, S-A	-

Special Precautions for User: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory Information

Toxic Substance Control Act (TSCA)

This product as supplied is listed as "Active" on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory).

This product as supplied is not subject to the TSCA Significant New Use Rule.

This product as supplied is not subject to TSCA 12(b) export notification requirements.

SARA 302 Components

This product does not contain any components which are subject to the reporting requirements of SARA Title III, Section 302 EHS TPQ.

SARA 304 Components

This product does not contain any components which are subject to the reporting requirements of SARA Title III, Section 304 RQ.

SARA 311/312 Hazards

Acute Health Hazard (Acute toxicity – dermal, inhalation, oral)

SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act

Not applicable.

Clean Air Act

Not applicable.

Section 15. Regulatory Information

CERCLA Reportable Quantity

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

US Department of Homeland Security (DHS)

This product does not contain any DHS chemicals.

US Department of Transportation (DOT)

Component	Reportable Quantity	DOT Marine Pollutant	DOT Severe Marine Pollutant
Tungsten hexacarbonyl	No	No	No

US State Right-to-Know Listings

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Tungsten hexacarbonyl	-	-	-	-	-

"X" – Listed.

US State Chemicals of High Concern Listings

Component	Maine	Vermont	Washington
Tungsten hexacarbonyl	-	-	-

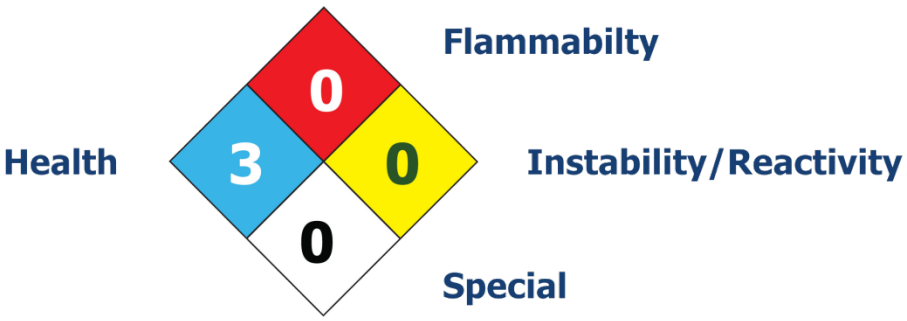
"X" – Listed.

California Proposition 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Section 16. Other Information

National Fire Protection Association (U.S.A.)



Section 16. Other Information

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

HMIS Rating

HEALTH	**3**
FLAMMABILITY	**0**
PHYSICAL HAZARD	**0**

History

Date of Issue/Date of Revision: 5/26/2025.

Date of Previous Issue: 12/12/2023.

References: None.

Abbreviations and Acronyms

ACGIH	:	American Conference of Governmental Industrial Hygienists.
AIHA	:	American Industrial Hygiene Association.
ATE	:	Acute Toxicity Estimate (per Chapter 3.1 of GHS 10 standard).
BEI	:	Biological Exposure Indices (ACGIH).
CAS	:	Chemical Abstracts Service (division of the American Chemical Society).
CHRIS	:	Chemical Hazards Response Information System (US DOT).
CLP	:	Classification, Labeling and Packaging (European Union (EU)).
DOT	:	US Department of Transportation.
EC-No.	:	The EC Inventory (EINECS, ELINCS and the NLP-list is the source of the seven digit EC number, an identifier of substances commercially available with the EU (European Union).
EINECS	:	European Inventory of Existing Commercial Chemical Substances.
EHS	:	Extremely Hazardous Substance.
ELINCS	:	European List of Notified Chemical Substances.
GHS	:	Globally Harmonized System of Classification and Labeling of Chemicals.
HAP	:	Hazardous Air Pollutants (Clean Air Act).
HMIS	:	Hazardous Materials Identification System.
HNOC	:	Hazards Not Otherwise Classified.
IARC	:	International Agency for Research on Cancer.
IATA	:	International Air Transport Association.
IATA-DGR	:	Dangerous Goods Regulations by the "International Air Transport Association" (IATA).

Section 16. Other Information

Abbreviations and Acronyms (cont.)

IDLH	:	Immediately Dangerous to Life or Health (US National Institute for Occupation Health and Safety (NIOSH)).
IMDG	:	International Maritime Code for Dangerous Goods.
IP	:	Intraperitoneal.
IV	:	Intravenous.
NFPA	:	National Fire Protection Association.
NIOSH	:	National Institute of Occupational Safety and Health.
NSRL	:	No Significant Risk Levels.
NTP	:	National Toxicology Program.
ODS	:	Ozone Depleting Substances (US Clean Air Act).
OECD	:	Organization for Economic Co-Operation and Development.
OEL	:	Occupational Exposure Limit.
OSHA	:	Occupational Safety and Health Administration.
PBT	:	Persistent Bioaccumulative and Toxic.
PEL	:	Permissible Exposure Limits.
REL	:	Recommended Exposure Limits.
RQ	:	Reportable Quantity.
SARA	:	Superfund Amendments and Reauthorization Act.
STEL (ST)	:	Short Term Exposure Limit (ACGIH/NIOSH)
STOT	:	Specific Target Organ Toxicity.
TLV	:	Threshold Limit Values (ACGIH).
TPQ	:	Threshold Planning Quantity.
TWA	:	Time Weighted Average.
VOC	:	Volatile Organic Compound.
vPvB	:	Very Persistent and Very Bioaccumulative.
WEEL	:	Workplace Environmental Exposure Level (AIHA).

Disclaimer

The information herein is believed to be accurate and is presented in good faith; however, no warranties or representations are made by Ereztech LLC regarding the accuracy or completeness of the information. Ereztech LLC shall not be liable for any damages resulting from the handling, or from the contact with the above product.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.