



SAFETY DATA SHEET

Section 1. Identification

Product Name:	Bis(N,N-di-tert-butyl-1,4-diaza-1,3-butadienyl)cobalt
Product Type:	Solid
CAS Number:	177099-51-3
Product Number:	CO9513
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
<u>In Case of an Emergency:</u>	(888) 658-1221 (for spill, leak, fire or exposure) *** Contact manufacturer for all non-emergency calls.

Section 2. Hazards Identification

Emergency Overview

Appearance/Odor:	Dark green-blue crystals, odor not determined.
Classification:	ACUTE TOXICITY, ORAL - Category 3, H301 SKIN CORROSION/IRRITATION - Category 2, H315 SENSITIZATION, SKIN - Category 1, H317 SERIOUS EYE DAMAGE/IRRITATION - Category 2, H319 SENSITIZATION, RESPIRATORY; - Category 1, H334 GERM CELL MUTAGENICITY – Category 2, H341 CARCINOGENICITY – Category 2, H351 HAZARDOUS TO THE AQUATIC ENVIRONMENT, LONG-TERM HAZARD - Category 1, H410

GHS Label Elements

Hazard Pictograms:



Signal Word:	DANGER
Hazard Statements:	H301: Toxic if swallowed. H315: Causes skin irritation.

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Section 2. Hazards Identification

Hazard Statements (cont.):

- H317: May cause an allergic skin reaction.
- H319: Causes serious eye irritation.
- H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H341: Suspected of causing genetic defects.
- H351: Suspected of causing cancer.
- H410: Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention:

- P203: Obtain, read and follow all safety instructions before use.
- P233: Keep container tightly closed.
- P260: Do not breathe dusts/aerosols/vapors/gases.
- P264 + P265: Wash hands and exposed skin thoroughly after handling. Do not touch eyes.
- P270: Do not eat, drink or smoke when using this product.
- P271: Use only outdoors or with adequate ventilation.
- P272: Contaminated work clothing should not be allowed out of the workplace.
- P273: Avoid release to the environment.
- P280: Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
- P284: In case of inadequate ventilation wear respiratory protection.

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.
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P318: If exposed or concerned, get medical advice.
- P330: Rinse mouth.
- P332 + P317: If skin irritation occurs: Get medical help.
- P337 + P317: If eye irritation persists: Get medical help.
- P342 + P316: If experiencing respiratory symptoms: Get emergency medical help immediately.
- P362 + P364: Take off contaminated clothing and wash it before reuse.
- P391: Collect spillage.

Storage:

- P403: Store in a well-ventilated place.
- P405: Store locked up.

Disposal:

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

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Section 2. Hazards Identification

General: None.

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

Hazards Not Otherwise Classified (HNOC): None identified.

Section 3. Composition/Information on Ingredients

Substance Type : Mono-constituent.

Synonyms : Co(DAD)₂.

Formula : C₂₀H₄₂N₄Co

Molecular Weight : 397.51

EC-No. : 812-234-8

Ingredient Name	%	CAS Number
Bis(N,N-di-tert-butyl-1,4-diaza-1,3-butadienyl)cobalt	≥ 98	177099-51-3

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. Get emergency medical help immediately. Show this safety data sheet to the doctor in attendance. 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 present and 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 medical help if skin irritation occurs.

Inhalation: Get emergency medical help immediately. 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 mouth-to-mouth method 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 device.

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Section 4. First Aid Measures

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.

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

Eye Contact: Symptoms may include stinging, tearing, and redness.

Inhalation: Serious effects on the lungs may include asthma, pneumonia and wheezing. Inhalation may cause an irritation of the respiratory organs of sensitive persons resulting in obstruction of airways. There are references in literature associating cobalt with interstitial fibrosis, a disease that can be fatal.

Skin Contact: May produce irritation. Repeated exposure may cause allergic dermatitis. May cause cross sensitivity to Chromium and Nickel.

Ingestion: Product is toxic if swallowed. Diarrhea and vomiting may occur. Ingestion of significant amounts of cobalt containing compounds has been reported to have potential for causing blood, heart, thyroid and pancreatic damage.

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

Notes to Physician: Treat symptomatically.

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: No data available.

Suitable Extinguishing Media: Use water spray (fog), sand, dry chemical or carbon dioxide (CO₂). For larger fires, use water spray or alcohol resistant foam.

Unsuitable Extinguishing Media: None identified.

Unusual Fire and Explosion Hazards: None identified.

Products of Combustion: Decomposition products may include carbon oxides (CO_x), nitrogen oxides (NO_x) and toxic cobalt oxide fumes.

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.

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Section 5. Fire Fighting Measures

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

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. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid the formation and inhalation of dusts and aerosols. 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: Stop leak/spillage and move containers from spill area if safe to do so. Avoid the formation and inhalation of dusts and aerosols. Dispose of collected spillage in accordance with federal, state and local regulations (see Section 13). 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.

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Section 7. Handling and Storage

Precautions:

Store in cool/dry place in tightly closed container. Keep container tightly sealed. Avoid the formation and inhalation of dusts and aerosols. Do not ingest. Avoid prolonged exposure. Provide adequate ventilation.

Section 7. Handling and Storage

Precautions:

Product is moisture sensitive; handle under a dry, inert gas. Nitrogen with less than 5 ppm each of moisture and oxygen is recommended. Avoid formation and inhalation of dusts and aerosols. 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). 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.

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 or smoking. Remove contaminated clothing and protective equipment before entering eating areas. Contaminated clothing should not be allowed to leave the workplace. See also Section 8 for additional information on hygiene measures.

Safe Storage Conditions:

Product is moisture sensitive; store under an inert gas. Nitrogen with less than 5 ppm each of moisture and oxygen is recommended. 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.

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Section 8. Exposure Controls/Personal Protection

Occupational Exposure Limits

Components	CAS-No.	List	Type	Value
Cobalt	7440-48-4	ACGIH	TLV	0.005 mg/m ³ TWA
		CA Title 8	Article 107	0.02 mg/m ³ PEL
		NIOSH	REL	0.05 mg/m ³ TWA
		OSHA Z1	PEL	0.1 mg/m ³ TWA

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.

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 and aerosols. Avoid contact with eyes and skin. Do not ingest. 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.

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Section 8. Exposure Controls/Personal Protection

Hand Protection (cont.):

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. For full contact, wear Neoprene or nitrile rubber gloves.

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.

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:	Solid.
Color:	Dark green-blue crystals.
Odor:	No data available.
Odor Threshold:	No data available.
Melting Point:	No data available.
Boiling Point:	84°C @ 0.32mm Hg.
Flash Point:	No data available.
Auto-ignition temperature:	No data available.
Specific Gravity:	No data available.
Vapor Pressure:	No data available.
Vapor Density:	No data available.
Water Solubility:	No data available.

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Section 10. Stability and Reactivity

Reactivity:	No data available.
Chemical Stability:	This product is stable when stored under a dry, inert atmosphere and away from heat. Nitrogen containing less than 5 ppm each moisture and air is recommended.
Conditions to Avoid:	No data available.
Incompatible Materials:	Strong oxidizing agents.
Hazardous Decomposition Products:	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Hazardous decomposition products formed under fire conditions: carbon oxides (CO _x), nitrogen oxides (NO _x) and toxic cobalt oxide fumes. Irritating fumes and organic acid vapors may be generated during exposure to elevated temperatures or open flame. In the event of a fire: see section 5.
Possibility of Hazardous Reactions:	Under normal conditions of storage and use noted above, hazardous reactions should not occur. Hazardous reactions or instability may occur under certain conditions of storage or use.

Section 11. Toxicological Information

Information on Toxicological Effects

Acute Toxicity	: Product is toxic if ingested.
Irritation/Corrosion	: No specific data available.
Sensitization	: Product may cause allergy or asthma symptoms or breathing difficulties if inhaled.
Germ Cell Mutagenicity	: Product is suspected of causing genetic defects.
<u>Carcinogenicity</u>	
IARC	: Cobalt; CAS 7440-48-4. Group 2A: probably carcinogenic to humans.
ACGIH	: Cobalt; CAS 7440-48-4. Group A3: confirmed animal carcinogen with unknown relevance to humans
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	: Product may damage fertility (cobalt).
Teratogenicity	: No specific data available.

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Section 11. Toxicological Information

Specific Target Organ Toxicity (single exposure)	: No specific data available.
Specific Target Organ Toxicity (repeated exposure)	: Chronic exposure to cobalt compounds may result in permanent lung damage.
Aspiration Hazard	: No specific data available.
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	: To the best of our knowledge, the chemical, physical and toxicological properties of this product have not been thoroughly investigated.

Section 12. Ecological Information

Aquatic Toxicity	: Product is very toxic to aquatic life with long lasting effects.
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	: No specific data available.
Other Adverse Effects	: 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) and can be dangerous. Dispose of as unused product.

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Section 14. Transport Information

	DOT	IMDG	IATA
UN Number	UN3467	UN3467	UN3467
UN Proper Shipping Name	Organometallic compound, toxic, solid, n.o.s. (Bis(N,N-di-tert-butyl-1,4-diaza-1,3-butadienyl)cobalt)	ORGANOMETALLIC COMPOUND, TOXIC, SOLID, N.O.S. (Bis(N,N-di-tert-butyl-1,4-diaza-1,3-butadienyl)cobalt)	Organometallic compound, toxic, solid, n.o.s. (Bis(N,N-di-tert-butyl-1,4-diaza-1,3-butadienyl)cobalt)
Transport Hazard Classes	6.1	6.1	6.1
Packing Group	III	III	III
Environmental Hazards	Yes	Yes	Yes
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.

Transporting in Bulk According to Annex II of MARPOL 73/78 and the IBC Code : Not applicable.

Section 15. Regulatory Information

TSCA (Toxic Substance Control Act):

This product is not listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory). Use of this product is restricted to research and development only. This product must be used under the supervision of a technically qualified individual as defined by the TSCA. This product must not be used for commercial purposes or in formulations for commercial purposes.

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

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SARA 311/312 Hazards

Acute Health Hazard (Acute toxicity – oral; Skin corrosion or irritation; Serious eye damage or eye irritation; Skin sensitization). Chronic Health Hazard (Germ cell mutagenicity; Carcinogen).

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Section 15. Regulatory Information

Massachusetts Right to Know Components

Cobalt	CAS-No. 7440-48-4	Revision Date -
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Pennsylvania Right to Know Components

Cobalt	CAS-No. 7440-48-4	Revision Date -
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New Jersey Right to Know Components

Cobalt	CAS-No. 7440-48-4	Revision Date 8/2/2010
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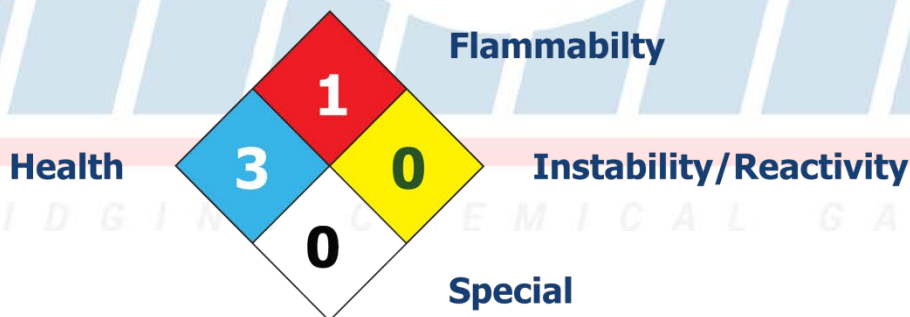
California Proposition 65 Components

This product contains a chemical known to State of California to cause cancer.

Cobalt	CAS-No. 7440-48-4	Revision Date 11/20/2015
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Section 16. Other Information

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



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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.

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Section 16. Other Information

HMIS Rating

HEALTH	3
FLAMMABILITY	1
PHYSICAL HAZARD	0

History

Date of Issue/Date of Revision : 7/16/2024

Date of Previous Issue : 5/22/2017

References : None available

Abbreviations and Acronyms

ACGIH: American Conference of Governmental Industrial Hygienists.

ATE: Acute Toxicity Estimate (per Chapter 3.1 of GHS 10 standard).

CAS: Chemical Abstracts Service (division of the American Chemical Society).

CLP: Classification, Labeling and Packaging (European Union (EU)).

DOT: US Department of Transportation.

GHS: Globally Harmonized System of Classification and Labeling of Chemicals.

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).

IDLH: Immediately Dangerous to Life or Health (US National Institute for Occupation Health and Safety (NIOSH)).

IMDG: International Maritime Code for Dangerous Goods.

NFPA: National Fire Protection Association.

NIOSH: National Institute of Occupational Safety and Health.

NTP: National Toxicology Program.

OECD: Organization for Economic Co-Operation and Development.

OEL: Occupational Exposure Limit.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limits.

REL: Recommended Exposure Limits.

SARA: Superfund Amendments and Reauthorization Act.

STEL (ST): Short Term Exposure Limit (ACGIH/NIOSH)

STOT: Specific Target Organ Toxicity.

TLV: Threshold Limit Values (ACGIH).

TWA: Time Weighted Average.

VOC: Volatile Organic Compound.

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.

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Section 16. Other Information

Disclaimer (cont.)

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.

