PRO™ CHEMICAL & DYE
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Safety Data Sheet

THIOX - THIOUREA DIOXIDE

Date of Revision: 1/26/2015

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: THIOUREA DIOXIDE
Chemical Formula: CH4N2O2S
CAS Number: 1758-73-2
Other Designations: FAS, Formamidinesulfinic acid, Aminoiminomethane Sulfinic acid
General Use: This material is a reducing agent used primarily in the production of bleached recycled pulp. it is also effective in the bleaching of stone ground-wood, pressurized ground-wood.
Emergency Telephone Numbers:
800-255-3924 ChemTel. (United States)
+ 1 01 813-248-0585 (Outside the United States)

Section 2 - Hazards Identification

1.

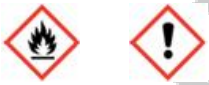
***** **Emergency Overview** *****

Highly succeptible to decomposition generating sulfur dioxide, ammonia, sulfinic acid and carbon dioxide if exposed to humidity and heat above 50°C. May irritate digestive tract, upper respiratory tract, eyes and skin.

HMIS
H 2
F 0
R 2
PPEt

Potential Health Effects

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Self-heating substances and mixtures (Category 1), H251
Acute toxicity, Oral (Category 4), H302
Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Acute aquatic toxicity (Category 3), H402
Chronic aquatic toxicity (Category 3), H412
GHS Label elements, including precautionary statements
Pictogram



Signal word Danger

Hazard statement(s)
H251 Self-heating: may catch fire.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s)
P235 + P410 Keep cool. Protect from sunlight.
P261 Avoid breathing dust/fume/ gas/ mist vapors/ spray.
P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well -ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves, protective clothing, eye protection, face protection.
P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P321 Specific treatment (see supplemental first aid instructions on this label).
P330 Rinse mouth.
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P407 Maintain air gap between stacks/pallets.
P410 Protect from sunlight.
P413 Store bulk masses greater than .? kg/ .? lbs at temperatures not exceeding .? °C/ .? OF.
P420 Store away from other materials.
P501 Dispose of contents/ container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS - none

Primary Entry Routes: Ingestion, Inhalation

Target Organs: Skin, eyes, upper respiratory tract

Acute Effects

Inhalation: May cause irritation to the upper respiratory tract. Symptoms may include coughing, sore throat and Shortness of breath.

Eye: May cause irritation, redness and pain

Skin: skin irritant when moisture is present.

Ingestion: May cause irritation to the digestive tract. Symptoms may include nausea, vomiting, abdominal pain, dizziness and headache.

Carcinogenicity: IARC, NTP, and OSHA do not list Thiourea Dioxide as a carcinogen.

Medical Conditions Aggravated by Long-Term Exposure: Chronic exposure may aggravate pre-existing conditions to to include diseases of the skin, eyes and respiratory

Chronic Effects:

Section 3 - Composition / Information on Ingredients

Ingredient Name	CAS Number	EINECS/ELINCS	O/O wt *or* %vol
THIOUREA DIOXIDE	1758-73-2	217-157-8	>99

Trace Impurities: Thiourea CAS #62-56-6 (<0.1)%

	OSHA PEL		ACGIHTLV		NIOSHREL		NIOSH
Ingredient	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
Thiourea Dioxide	lOmg/m^3	none estab.	none estab.	None estab.	None estab.	none estab.	None estab.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult medical doctor.
Eye Contact: Immediately flush with large amounts of water for at least 15 minutes while holding eyelids apart. In all cases of eye contamination it is a sensible precaution to seek medical advice.
Skin Contact: Wash contaminated skin with plenty of soap and water. If irritation occurs, seek medical advice.
Ingestion: If swallowed, seek medical attention immediately.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Note to Physicians: Treat symptomatically based on judgment of doctor and individual reactions of patient.
Special Precautions/Procedures:

Section 5 - Fire-Fighting Measures

Flash Point: *N*/A
Flash Point Method:
Burning Rate:
Autoignition Temperature: *N/A*
LEL: *N/A*

NFPA*

0
2 2

UEL: N/A
Extinguishing Media: Excessive quantity of water, dry chemical or carbon dioxide. Use equipment/media appropriate to surrounding fire conditions.
Unusual Fire or Explosion Hazards: Material may decompose after long exposure to high moisture level. May decompose when heated above 50°C or involved in a fire.
Hazardous Combustion Products: Emits toxic fumes of carbon monoxide, carbon dioxide, nitrogen oxides and sulfur oxides when heated to decomposition.
Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.
Fire-Fighting Equipment: Wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure- demand or positive-pressure mode.

- As of 3/20/2000, Thiourea dioxide not rated by NFPA, values are estimated.

Section 6 - Accidental Release Measures

Spill /Leak Procedures:
Spills: Contain spill. Sweep up but avoid generating dust. Collect and seal in properly labeled containers for disposal.
Large Spills
Containment: For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.
Cleanup:
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Wear overalls, safety glasses and impervious gloves. If dust exist, wear dust mask meeting the requirements of AS1715 and AS1716.

Storage Requirements: Store in a cool (below 35°C), dry area out of direct sunlight. Protect from atmospheric moisture. Store away from oxidizing agents. Do not add to hot materials; do not grind or subject to frictional heat as decomposition may result.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls:
Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.
Administrative Controls:
Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CPR 1910.134) and, if necessary, wear a MSHA/NlOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.
Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.
Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.
Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.
Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.
Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: granular solid
Appearance and Odor: white, turns yellowish with time
Odor Threshold: Odorless
Vapor Pressure: negligible
Vapor Density (Air=l): 3.8
Formula Weight: 108.12
Density:
Specific Gravity (H20=1, at 4°C): 1.71
pH: 4 (1 solution)
Water Solubility: 30 g/l (25°C)
Other Solubilities:30 g/l (25°C)
Boiling Point: > 100 °C (212 *0F)*
Freezing/Melting Point: 126°C (259 OF)
Decomposition Temperature: > 123 °C
Viscosity:
Refractive Index:
Surface Tension:
% Volatile:

Section 10 - Stability and Reactivity

Stability: Thiourea Dioxide may decompose on lengthy exposure to high temperature and humidity. Avoid heat, humidity and exposure to incompatibles.
Polymerization: Hazardous polymerization cannot occur.
Chemical Incompatibilities: Strong oxidizing agents (alkalis, chlorates, nitrates, permanganates, etc.)
Conditions to Avoid: Product reacts with water. Take precautions to avoid contact with atmospheric moisture and incompatibilities.
Hazardous Decomposition Products: Thermal oxidative decomposition of Thiourea Dioxide can produce toxic fumes of carbon monoxide, carbon dioxide, hydrogen cyanide, nitrogen oxides and sulfur oxides.

Section 11- Toxicological Information

Toxicity Data:*

Acute Oral Effects:
Rat, oral, LD50-LC50 Mixture: 1120 mg/kg

Epidemiology: No information found
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: No information found
Neurotoxicity: No information found

* See NIOSH, *RTECS(PB0372500),* for additional toxicity data

Section 12 - Ecological Information

Ecotoxicity:
Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna (Water flea) - 390 mg/l- 24 h
Toxicity to algae EC50 - Desmodesmus subspicatus (green algae) - 32 mg/l- 72 h
Environmental Fate: no data available
Environmental Degradation: no data available
Soil Absorption/Mobility: no data available

Section 13 - Disposal Considerations

Disposal: Dispose of in accordance with all Local, State and Federal regulations at an approved waste disposal
Disposal Regulatory Requirements:
Container Cleaning and Disposal:

Section 14 - Transport Information

Regulated for transportation

US DOT(49 CFR 172.101): PSN: Thiourea Dioxide Hazard Class: 4.2 UN Number: UN3341 Packing Group: III	**ITA** PSN: Thiourea Dioxide Hazard Class: 4.2 UN Number: UN3341 Packing Group: III
TDG PSN: Thiourea Dioxide Hazard Class: 4.2 UN Number: UN3341 Packing Group: III	**IMDG/IMO** PSN: Thiourea Dioxide Hazard Class: 4.2 UN Number: UN3341 Packing Group: III

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 1758-73-2 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
SARA 3111312 Hazards Reactivity Hazard, Acute Health Hazard
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CW A.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 1758-73-2 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California Prop 65
California No Significant Risk Level: None of the chemicals in this product are listed.
European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
XN
Risk Phrases:
R 22 Harmful if swallowed.
R 36/37/38 lrritating to eyes, respiratory system and skin.
Safety Phrases:
S 24/25 Avoid contact with skin and eyes.
S 37 Wear suitable gloves.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 28A After contact with skin, wash immediately with plenty of water

WGK (Water Danger/Protection)
CAS# 1758-73-2: 1
Canada - DSLINDSL
CAS# 1758-73-2 is listed on Canada's DSL List.
Canada - WHMIS
not available.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contain all of the information required by those regulations.

Section 16 - Other Information

Disclaimer: All information, recommendations and suggestions appearing herein are based upon sources believed to be reliable:
However, it is the users' responsibility to determine the safety, toxicity and suitability for its own use of this product. The manufacturer does not assume any liability arising out of the use by others of this product.