AQUABOND Chemistry for Tomorrow SAFETY DATA SHEET

Thiourea Dioxide

SECTION 1: IDENTIFICATION

Product identifier used on a label:	**Thiourea Dioxide**
Product code:	
Recommended use of the chemical and restrictions on use:	Industrial bleaching and die colour removal
Chemical family:	Organosulfur Compounds.
Name, address and phone # of supplier:	Aqua Bond Inc. PO Box 63635, Toronto, ON, M1V 5K2 (416) 754-7211
24 Hr. Emergency phone #	**CANUTEC (613) 996-6666**

SECTION 2: HAZARDS IDENTIFICATION

Classification of the chemical: This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:
SELF-HEATING SUBSTANCES AND MIXTURE - CATEGORY 1
ACUTE ORAL TOXICITY - CATEGORY 4
ACUTE INHALATION TOXICITY – CATEGORY 2
EYE DAMAGE/IRRITATION – CATEGORY 1
SKIN CORROSION/IRRITATION – CATEGOTY 2
STOT-SE – CATEGORY 1, 2, 3
STOT-RE - CATEGORY 2
AQUATIC HAZARD (ACUTE) – CATEGORY 3

Label elements:



Signal word: Danger

Hazard statements:
H251 Self-heating: may catch fire.
H302 Harmful if swallowed.
H330 Fatal if inhaled.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H336 May cause drowsiness or dizziness.
H361fd Suspected of damaging fertility or the unborn child
H370 Causes damage to organs: Respiratory System
H371 May cause damage to organs: Kidney
H373 May cause damage to organs through prolonged or repeated exposure: Liver Kidney
H402 Harmful to aquatic life.

Precautionary statements:	P235+P410 Keep cool. Protect from sunlight. P260 Do not breathe dust/fume/gas/mist/vapours/spray. P264 Wash skin thoroughly after handling. P280 Wear protective gloves, protecting clothing, eye protection, face protection. P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303+P361+P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water. Shower. P304+P340+P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. P305+351+P338+P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician. P363 Wash contaminated clothing before reuse. P403+P407 Store in a well ventilated place. Maintain air gap between stacks/pallets.
Other hazards:	None identified.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/Mixture: Pure substance

Ingredient name	**CAS Number**	**Concentration (%)**
Thiourea Dioxide	1758-73-2	> 98%

SECTION 4: FIRST-AID MEASURES

Description of first aid measures:

Ingestion	Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter lungs. Never give anything by mouth to an unconscious person. If unconscious, place in a recovery position and get medical attention immediately. Maintain an open airway.
Inhalation	Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that mists are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
Skin contact	Remove contaminated clothing and shoes. Wash skin thoroughly with water. Get medical attention immediately.
Eye contact	Get medical attention immediately. Call a poison center or physician. Check for and remove any contact lenses. Immediately flush eyes with running water for at least

30 minutes, keeping eyelids open. Chemical burns must be treated promptly by a physician.

Most important symptoms and effects, both acute and delayed:
Causes burns by all exposure routes. Product is a corrosive material. Possible perforation of stomach or esophagus should be checked. Ingestion causes severe swelling and damage to tissue.

Indication of any immediate medical attention and special treatment needed:
No specific treatment. Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media:

Suitable	Use water spray, dry chemical or carbon dioxide.
Unsuitable	None known.
Special hazards arising from the substance:	Ambient fire may liberate hazardous vapours. Fire may cause evolution of: Sulphur oxides, nitrogen oxides.
Special protective actions for fire-fighters:	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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Special protective equipment for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA).

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	Advice for non-emergency personnel: Avoid substance contact. Avoid inhalation of dusts in all circumstances. Ensure adequate ventilation.
Environmental precautions:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided..
Methods and materials for containment and cleaning up:	Eliminate all sources of ignition. Evacuate unprotected personnel from equipment recommendations. Never exceed any occupational exposure limit. Shovel or sweep material into plastic bags or vented containers for disposal. Do not return spilled or contaminated material to inventory. Flush remaining area with water to remove trace residue and dispose of properly. Avoid direct discharge to sewers and surface waters.
Special spill response procedures:	In case of transportation accident, contact CANUTEC (613) 996-6666.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling:	Put on appropriate personal protective equipment. Avoid exposure to any mists or fumes. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in

	the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Use caution when adding this material to water.
Conditions for safe storage:	Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool (below 30°C) and well-ventilated area, away from incompatible materials, food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
Incompatible materials:	See Section 10.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters:

Occupational exposure limit values: Not established.

DNEL (Derived No Effect Level) for workers and the general population:

Route Type of effect DNEL:	For the worker Inhalation Systemic effect – long term 0.5524 mg/m3 Dermal Systemic effect – long term 0.157 mg/kg bw/day General Population Inhalation Systemic effect – long term 0.136 mg/m3 Dermal Systemic effect – long term 0.078 mg/kg bw/day Oral Systemic effect – long term 0.078 mg/kg bw/day

PNEC (Predicted No Effect Concentration) values:

Compartment:	PNEC.
Water	PNEC aqua (freshwater): 32 µg/L PNEC aqua (marine water): 3.2 µg/L PNEC aqua (intermittent releases): 320µg/L
Sediment:	PNEC sediment (freshwater): 0.116 mg/kg sediment dw. PNEC sediment (marine water): 0.0116 mg/kg sediment dw.
STP	PNEC STP: 1 mg/L
Soil	PNEC soil: 4.41 µg/kg soil dw
Air	No hazard identified
Secondary poisoning	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain.

Exposure controls:

Appropriate engineering controls:	General room ventilation is required. Local exhaust ventilation, process enclosures or other engineers controls may be needed to maintain airborne levels below recommended exposure limits. Avoid creating dust or mist. Maintain adequate ventilation. Do not use in closed or confined spaces. Keep levels below exposure limits. To determine exposure levels, monitoring should be performed regularly.

Personal Protective Equipment:

Eye and face protection:	Safety goggles or eye protection in combination with breathing protection.
Skin protection:	Protective gloves. Protective clothing, rubber boots. Glove material: Nitrile

	rubber; Glove thickness: 0.11 mm; Break through time: > 480 min.
Respiratory protection:	Required when dusts are generated. Recommended Filter type: Filter P 3 (acc. to DIN 3181) for solid and liquid particles of toxic and very toxic substances.
Environmental Exposure Controls:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Whitish solid.
Odour:	Odourless.
pH:	Not available
Melting point:	129°C at 101.3 kPa.
Flash point:	Decomposes before boiling.
Evaporation rate:	Not applicable.
Flammability:	Not flammable.
Upper and lower flammability limits:	Not applicable.
Vapour pressure:	0.36 Pa at 30°C.
Relative density:	1.68 @ 20°C
Solubility:	27 g/l at 20°C.
Partition coefficient n-octanol/water Log Pow:	-3.23 at 20°C.
Auto-ignition temperature:	Not available.
Decomposition temperature:	129 – 133°C.
Viscosity:	Not applicable.
Explosive Properties:	No explosive properties
Oxidising Properties:	No oxidising properties

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Stable under recommended storage and handling conditions.
Chemical stability:	Heat-sensitive, sensitive to moisture.
Possibility of hazardous reactions:	No hazardous reactions known.
Conditions to avoid:	Incompatible materials. Heat. Exposure to moist air or water.
Incompatible materials:	Strong bases, strong oxidizing agents.
Hazardous decomposition products:	Nitrogen oxides (NOx). Carbon monoxide (CO). Carbon dioxide (CO2). Sulphur oxides. Ammonia.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects:

Oral, LD50:	1496 mg/kg bw (female rat) 1565 mg/kg bw (male rat) (OECD 401/GLP)
Inhalation, LC50:	164 mg/m³ (OECD 403/GLP)
Acute toxicity:	
Dermal, LD50:	

Skin corrosion/irritation:	Irritating (author's own method).
Serious eye damage/irritation:	Highly irritating (F. D. A of the United States (Fed. Reg. 28 (119), 5582, 1963); Draize, Kelley [Drug Cosmet. Industr. 71 (1952) 36]
Respiratory or skin sensitization:	No study available.
Germ cell mutagenicity: Genetic toxicity:	No adverse effect observed (negative).
Carcinogenicity:	No information available.
Reproductive toxicity:	NOAEL (parental, systemic toxicity): 47 mg/kg bw/day (OECD 421, GLP) NOAEL (parental, reproductive performance): 15 mg/kg bw/day (OECD 421, GLP)
STOT-single exposure:	No information available.
STOT-repeated exposure:	Sub acute NOAEL (rat): 47 mg/kg body weight/day (OECD 407, GLP)
Aspiration hazard	No information available.

SECTION 12 ECOLOGICAL INFORMATION

Toxicity :	
Fish:	LC50 = 416 mg/L/96h (Poecilia reticulata)
Daphnia:	EC50 = 80.7 mg/L/48h (Daphnia magna)
Algae:	EC50 = 32 mg/L/72h (Scenedesmus subspicatus)
Persistence and degradability	Readily biodegradable
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 3).
Mobility in soil:	No information available.
Results of PBT and vPvB assessment:	The substance is not a PBT / vPvB substance.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal methods:	The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION 14: TRANSPORT INFORMATION

	TDG
UN Number:	UN3341
UN proper shipping name:	THIOUREA DIOXIDE
Transport hazard class:	4.2
Packing group:	III
Environmental hazard:	Non marine pollutant
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

Canada inventory (DSL): This substance is on the DSL.

SECTION 16: OTHER INFORMATION

Revision date: November 10, 2023
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations
TWA: Time Weighted Average over 8 hours of work.
TLV: Threshold Limit Value over 8 hours of work.
REL: Recommended Exposure Limit
PEL: Permissible Exposure Limit
STEL: Short Term Exposure Limit during x minutes.
IDLH: Immediately Dangerous to Life or Health
WEEL: Workplace Environmental Exposure Levels
CEIL: Ceiling

Disclaimer

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