Safety Data Sheet

Section 01 - Identification

Product Identifier	Catalyzed Hydrazine 35% Scav-Ox II
Other Means of Identification	Aqueous Hydrazine Solution
Product Use and Restrictions on Use	Corrosion inhibitor and oxygen scavenger for boiler treatment.
Initial Supplier Identifier	ClearTech Industries Inc. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7
Prepared By	ClearTech Industries Inc. Technical Writer Phone: 1 (800) 387-7503
24-Hour Emergency Phone	Phone: 1 (306) 664 – 2522

Section 02 - Hazard Identification

GHS-Classification

Acute Toxicity-Oral	Category 3
Acute Toxicity-Dermal	Category 3
Acute Toxicity-Inhalation	Category 3
Skin Corrosion/Irritation	Category 1B
Skin Sensitization	Category 1
Carcinogenicity	Category 1B

Physical Hazards

No known physical hazards.

Danger

Hazard Statements
H301 – Toxic if swallowed.
H311 – Toxic in contact with skin.
H314 – Causes severe skin burns and eye damage.
H317 – May cause an allergic skin reaction.
H331 – Toxic if inhaled.
H350 – May cause cancer.

Pictograms

Precautionary Statements

P201 – Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.
P405 – Store locked up.
P280 – Wear protective gloves, protective clothing, eye protection, and face protection.
P403 + P233 – Store in a well-ventilated place. Keep container tightly closed.
P264 – Wash hands thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product
P321 – Specific treatment: Use Pyridoxine to treat neurological symptoms of hydrazine exposure.
P303 + P361 + P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin
P301 + P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
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.
P271 – Use only outdoors or in a well-ventilated area.
P260 – Do not breathe gas, mist, vapours, or spray.
P310 – Immediately call a POISON CENTER or doctor/physician.
P272 – Contaminated work clothing should not be allowed out of the workplace.
P501 – Dispose of contents/container in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 03 - Composition / Information on Ingredients

Chemical Name	CAS Number	Weight %	Unique Identifiers
Hydrazine	302-01-2	35%	
Water	7732-18-5	65%	

Section 04 - First Aid Measures

Inhalation

Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek immediate medical attention.

Skin Contact / Absorption

Remove contaminated clothing. Rinse skin with lukewarm, gently flowing water for 30 minutes. Seek immediate medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

Eye Contact

Contact lenses should never be worn when working with this product. Flush immediately with water for at least 30 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. Seek immediate medical attention.

Ingestion

Dilute with small quantities of water (200-250 mL). Do not induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person. Seek immediate medical attention.

Additional Information

Pyridoxine (Vitamin B6) has been used successfully to treat the neurological symptoms of hydrazine exposure.

Section 05 - Fire Fighting Measures

Suitable Extinguishing Media	Water is the preferred extinguishing media as it will dilute the material resulting in a non-flammable mixture. Use alcohol resistant foam, carbon dioxide, dry chemical, or vaporizing liquid extinguishing agents. Water spray or fog may also be effective for extinguishing or to absorb heat and keep exposed material from being damaged by fire.
Unsuitable Extinguishing Media	Not Available
Specific Hazards During Fire Fighting	Ammonia and hydrogen.
Special Protective Equipment for Fire-Fighters	Wear NIOSH-approved self-contained breathing apparatus and protective clothing.
Further Information	Not Available

Section 06 - Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures	Wear appropriate personal protective equipment. Ventilate area. Only enter area with PPE. Stop or reduce leak if safe to do so. Prevent material from entering sewers. Flush with water to remove any residue.
Environmental Precautions	This material is miscible in water. Notify all downstream users of possible contamination. Divert water flow around spill if possible and safe to do so.
Methods and Materials for Containment and Cleaning Up	Spills should be contained by diking and digging a containment pit sufficiently large enough to hold at least 10 times the spill. Dilute to approximately 10 times the volume with water and add 5-8% calcium hypochlorite solution slowly to completely oxidize the hydrazine. Dry calcium hypochlorite or other oxidizing agents should never be allowed to mix with undiluted hydrazine solutions. The resulting reaction is very vigorous, releasing large amounts of heat and hydrogen gas. Neutralized material can be absorbed using clay, sand or commercial absorbent and place material into containers for future disposal per local regulations.

Section 07 - Handling and Storage

Precautions for Safe Handling	Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure. This product may become electrostatically charged during filling and transferring. Make sure equipment is properly bonded and grounded.
Conditions for Safe Storage	Store in a dry place away from heat (below 50^{o}C) and away from ignition sources and oxidants, preferably outdoors. Shelter drums stored outdoors from direct sunlight. For indoor storage areas, continuous ventilation should be provided.
Incompatibilities	Strong oxidizing agents, peroxides, nitrogen tetroxide, fuming nitric acid, fluorine, halogen fluorides, metal oxides such as those of iron, copper, lead, manganese and molybdenum. Package only in Teflon high density polyethylene or 304L or 347 stainless steels containing less than 0.5% molybdenum.

Section 08 - Exposure Controls and Personal Protection

Exposure Limit(s)

Component	Regulation	Type of Listing	Value
Hydrazine	ACGIH	TLV-TWA	0.01ppm

OSHA	PEL-T-TWA	1ppm
OSHA	PEL-TWA	0.1ppm

Engineering Control(s)

Ventilation Requirements

Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.

Other

Do not store or transfer hydrazine solutions in open containers. Because hydrazine can be absorbed into the body by all common routes of exposure, protective equipment must be used. Personal protective equipment is not an adequate substitute for safety work practices, proper equipment design and good mantenance practices. Eye wash facility should be close in proximity. Emergency shower should be in close proximity.

Protective Equipment

Eyes/Face

Chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.

Hand Protection

Impervious gloves of chemically resistant material (rubber or PVC) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

Skin and Body Protection

Body suite, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

Impervious boots of chemically resistant material should be worn at all times. No special footwear is required other than what is mandated at place of work.

Respiratory Protection

A positive pressure, supplied-air respirator or a self-contained breathing apparatus is recommended if airborne concentrations exceed the appropriate standards.

Thermal Hazards

Not Available

Section 09 - Physical and Chemical Properties

Appearance

Physical State

Ammonical liquid

Colour

Colourless to light yellow

Odour

Ammonia odour.

Odour Threshold

3.7 ppm

Property

pH

10.1-10.7 (1% solution in neutral, distilled water)

Melting Point/Freezing Point

-65°C

Initial Boiling Point and Boiling Range

109.4°C

Flash Point

Product is water based in will not flash. Decomposition temperature above 250^{o}C.

Evaporation Rate	Not Available
Flammability	Non-Flammable
Upper Flammable Limit	Not Applicable
Lower Flammable Limit	Not Applicable
Vapour Pressure (mm Hg, 20°C)	22 at 30°C
Vapour Density (Air=1)	Not Available
Relative Density	Not Available
Solubility(ies)	Completely soluble
Partition Coefficient: n-octanol/water	Log P_{OW} = -1.1 (Hydrazine)
Auto-ignition Temperature	Not Applicable
Decomposition Temperature	> 250°C
Viscosity	Not Available
Explosive Properties	Not Available
Specific Gravity (Water=1)	1.027
% Volatiles by Volume	100%
Formula	N_2H_4
Molecular Weight	32.05 (active ingredient)

Section 10 - Stability and Reactivity

Reactivity	Slow reaction with oxygen from the air is possible at room temperature.
Stability	Stable at normal temperatures and pressures.
Possibility of Hazardous Reactions	Hazardous polymerization will not occur.
Conditions to Avoid	Avoid heat, sparks, open flame. Avoid contact with incompatible materials. Avoid concentrating by evaporation. Pure substance can ignite spontaneously on contact with oxidizers, organic materials, and metal oxides.
Incompatible Materials	Strong oxidizing agents, peroxides, nitrogen tetroxide, fuming nitric acid, fluorine, halogen fluorides, metal oxides such as those of iron, copper, lead, manganese and molybdenum. Package only in Teflon high density polyethylene or 304L or 347 stainless steels containing less than 0.5% molybdenum.
Hazardous Decomposition Products	Under catalytic influence or elevated temperatures: hydrogen, nitrogen and ammonia.

Section 11 - Toxicological Information

Acute Toxicity

Component	Oral LD_{50}	Dermal LD_{50}	LC_{50}
Hydrazine (35%)	150 mg/kg (rat)	227.5 mg/kg (rabbit)	630 ppm (female rat, 4hr)
	65 mg/kg (guinea pigs)		1425 ppm (male rat, 4hr)

Chronic Toxicity – Carcinogenicity

Component	IARC
Hydrazine	Group 2B: Possibly carcinogenic to humans.

Skin Corrosion/Irritation	Corrosive. Capable of producing severe burns, blisters, ulcers and permanent scarring.
Serious Eye Damage/Irritation	Corrosive. Capable of producing serious eye burns and permanent damage, including blindness.
Ingestion	Highly toxic. Causes irritation and burning of the mucous membranes of the gastrointestinal tract.
Inhalation	Toxic by inhalation and can be rapidly absorbed through the lungs. May cause moderate to severe irritation to the nose, throat, mucous membranes, upper respiratory tract and lungs. No permanent damage expected. Damage may also result to liver, kidneys and blood. High exposure may give rise to hemolysis of the blood cells. Vomiting, diarrhea, nausea, dizziness, cyanosis and convulsions may also occur.
Respiratory or Skin Sensitization	Skin contact may cause an allergic skin reaction. This material tested positive for skin sensitization in humans. Repeated or prolonged skin contact may cause some individuals to develop skin rash and other skin complications due to allergic skin sensitization.
Germ Cell Mutagenicity	Hydrazine has demonstrated mutagenic potential in several test systems such as bacteria, phage, higher plants, drosophila, and the host-mediated assay. It was negative in the dominant lethal assay in mice. Dermal contact with hydrazine at a dose causing skin damage and systemic effects has produced embryolethality in rats.
Reproductive Toxicity	Animal testing did not show any effects on fertility. Fetotoxicity has been observed in animal studies.
STOT-Single Exposure	Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma.
STOT-Repeated Exposure	Damage to liver, lungs, kidneys, blood and blood forming organs, dermatitis, allergic sensitization to skin. May cause damage to the central nervous system.
Aspiration Hazard	Irritation may lead to chemical pneumonitis and pulmonary edema.
Synergistic Materials	Not Available

Section 12 - Ecological Information

Ecotoxicity

Component	Toxicity to Algae	Toxicity to Fish	Toxicity to Daphnia and Other Aquatic Invertebrates
Hydrazine	EC_{50}(Green algae, 72hr): 0.001uL/L	LC_{50}(Lepomis macrochirus, 96 hrs): 1.08mg/L	LC_{50}(Daphnia magna, 48hr): 0.19mg/L

Biodegradability Not Available

Bioaccumulation	An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low.
Mobility	If released to soil, hydrazine is expected to have very high mobility based on an estimated Koc of 2.
Other Adverse Effects	Not Available

Section 13 - Disposal Considerations

Waste From Residues/Unused Products	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
Contaminated Packaging	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 - Transport Information

UN Number	UN 3293
UN Proper Shipping Name	HYDRAZINE, AQUEOUS SOLUTION
Transport Hazard Class(es)	6.1
Packaging Group	III
Environmental Hazards	Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.
Special Precautions	Not Available
Transport in Bulk	Not Available

Additional Information

Packing Group	Limited Quantity Index
III	5 L

TDG

Other	Secure containers (full and/or empty) with suitable hold down devises during shipment and ensure all caps, valves, or closures are secured in the closed position.

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 14 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

Section 15 - Regulatory Information

NOTE: THE PRODUCT LISTED ON THIS SDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS SDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

Section 16 - Other Information

Preparation Date	August 6, 2015

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

References:

1) CHEMINFO
2) eChemPortal
3) TOXNET
4) Transportation of Dangerous Goods Canada
5) HSDB
6) ECHA

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