



MATERIAL SAFETY DATA SHEET

Trade Name: **Micro-Dyne™**

Revision Date: 22-Dec-09

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: Micro-Dyne™
Chemical Family: Mixture
Applications: Oil well drilling fluid additive
Emergency Telephone (24 hr.): (ChemTrec) 800-424-9300
Supplied by: **HiTech Fluid Systems Ltd.**
1800, 505 - 3rd Street S.W.
Calgary, AB T2P 3E6
Tel: 403.547.2906
Fax: 403.547.3129
www.hitechfluid.com

Revision Number: 6

HMIS Rating
Health: 1* **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Quaternary ammonium compound		60 - 100	No comments.
Polymer		10 - 30	No comments.
Glycol		1 - 5	No comments.
Silica, amorphous	7631-86-9	1 - 5	No comments.

3. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye, skin and respiratory tract irritation. Long term inhalation of particulates may cause lung damage. Cancer hazard. Contains crystalline silica which may cause cancer.

Canadian Classification:
UN PIN No: Not regulated **WHMIS Class:** D2A D2B

Physical State: Powder **Odor:** Mild Amine **Color:** White to Gray

Potential Health Effects:

Acute Effects

Eye Contact: May irritate eyes.
Skin Contact: May be irritating to the skin.
Inhalation: May cause respiratory tract irritation.
Ingestion: May cause gastric distress, nausea and vomiting of ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information

Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.

Target Organs/ Medical Conditions**Aggravated by Exposure:** Eyes, Skin, Respiratory system**4. FIRST AID MEASURES**

Eye Contact:	Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.
Skin Contact:	Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.
Inhalation:	Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion:	Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.
General Notes:	Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES**Flammable Properties**

Flash Point: F (C): >212F (100C)
Flash Point Method: SFCC

Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND

Autoignition Temperature: F(C) ND
Flammability Class: NA

Other Flammable Properties: Dusts at sufficient concentrations can form explosive mixtures with air.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire. This material is not combustible.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Hydrogen chloride (HCl). Oxides of: Carbon. Nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Use personal protective equipment identified in Section 8.
Spill Procedures:	Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.
Environmental Precautions:	Waste must be disposed of in accordance with federal, state and local laws. Do not allow to enter sewer or surface and subsurface waters.

7. HANDLING AND STORAGE

Handling:	Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only in a well ventilated area. Wash thoroughly after handling.
Storage:	Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Quaternary ammonium compound		60 - 100	NA	NA	NA	(1)
Polymer		10 - 30	NA	NA	NA	(5)
Glycol		1 - 5	NA	NA	AIHA WEEL: 50 ppm (total); 10 mg/m ³ (aerosol)	None
Silica, amorphous	7631-86-9	1 - 5	10 mg/m ³ (total); 3 mg/m ³ (respirable)	see Table Z-3	NA	None
Silica, crystalline, quartz	14808-60-7	1 - 5	0.05 mg/m ³	see Table Z-3	NIOSH: 0.05 mg/m ³ TWA (10H day/40H wk)	(R)

Notes

(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).

(R) Respirable fraction (ACGIH); Table Z-3: PEL for Mineral Dusts containing crystalline silica are 10 mg/m³ / (%SiO₂+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

This product may contain residual formaldehyde.

(5) Workplace formaldehyde exposure limits, personal protective equipment, monitoring, etc., are regulated under OSHA 29 CFR 1910.1048.

Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

Dust resistant safety goggles.

Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Nitrile. Neoprene.

Respiratory Protection:

Use at least a NIOSH-approved N95 half-mask disposable or reusable particulate respirator (dust mask). In work environments containing oil mist/aerosol, use at least NIOSH-approved P95 half-mask disposable or reusable particulate respirator. For exposure exceeding 10 x PEL use a NIOSH-approved N100 Particulate Respirator.

Refer to Exposure Limits table (Section 8) for component specific respiratory protection recommendations.

General Hygiene Considerations:

Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	White to Gray
Odor:	Mild
Physical State:	Amine Powder
pH:	ND
Bulk Density, lb/ft³: Compacted:	50; uncompacted: 38
Specific Gravity (H₂O = 1):	0.609 - 0.801 g/cc
Solubility (Water):	Insoluble
Flash Point: F (C):	>212F (100C)
Melting/Freezing Point:	ND
Boiling Point:	ND
Vapor Pressure:	NA
Vapor Density (Air=1):	NA
Evaporation Rate:	NA
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame.
Materials to Avoid:	Oxidizers. Acids.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization:	Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Polymer		Oral LC50: >17 g/kg (rat); Dermal LC50: >2 g/kg (rabbit)
Glycol		Oral LC50: 20 - 34 g/kg (rat); Dermal LC50: >10 g/kg (rabbit)

Component Toxicological Summary

Silica, crystalline,

Crystalline silica is the most widely occurring of all minerals. The most common form of silica is quartz sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

Product Toxicological Information

This product may contain residual amine. Some amines may cause skin sensitization, an allergic reaction.

This product may contain or release trace amounts of formaldehyde. The U.S. Occupational Safety and Health Administration (OSHA) considers formaldehyde a suspect human carcinogen that is linked to nasal and lung cancer. OSHA specifically regulates formaldehyde under 29 CFR 1910.1048. The International Agency for Research on Cancer (IARC) has classified formaldehyde as a Group 2A carcinogen (limited evidence in humans, sufficient evidence in animals). The National Toxicology Program (NTP) considers formaldehyde to be reasonably anticipated to be a human carcinogen. Formaldehyde has caused genetic changes in vitro and in vivo tests. (NTP) Exposure to formaldehyde has been linked to adverse reproductive effects in some human and animal studies. In other reproductive studies, however, no adverse effects were noted. (Meditext) Formaldehyde may also cause skin and respiratory sensitization (allergic reaction).

12. ECOLOGICAL INFORMATION

Data

Glycol LC50 24H: >5000 mg/l (goldfish); LC50 48G: >10,000 mg/l (guppy); LC50 30M: 710 mg/l (Photobacterium phosphoreum); LC50 48H: <10,000 mg/l (water flea)

Product Ecotoxicity Data: Contact MASI's Environmental Affairs Department for available ecotoxicity data

Biodegradation	ND
Bioaccumulation:	ND
Octanol/Water Partition	ND
Coefficient:	ND

13. DISPOSAL CONSIDERATIONS

Waste Classification:	Not determined
Waste Management:	Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.
Disposal Method:	Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT	
Shipping Description:	Not regulated
TDG (Canada):	
Shipping Description:	Not regulated
UN PIN No.:	Not regulated
IMDG:	
Shipping Description:	Not regulated
ICAO/IATA:	
Shipping Description:	Not regulated

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories: Immediate (acute) health hazard. Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQs	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M
Silica, crystalline, quartz				X			

State Comments: Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

International Chemical Inventories

Australia AICS	Components are listed or exempt from listing.
Canada DSL	Contains a component(s) that is listed on the NDSL.
China Inventory	Contains a component that is not listed.
European Union EINECS	Components are listed or exempt from listing.
Japan METI ENCS	Contains a component that is not listed.
Korea TCCL ECL	Contains a component that is not listed.
Philippine PICCS	Contains a component that is not listed.
U.S. TSCA	Components are listed or exempt from listing.
U.S. TSCA	No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A D2B

16. OTHER INFORMATION

The following sections have been revised: 1

NA – Not Applicable, ND – Not Determined

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guarantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.