# MATERIAL SAFETY DATA SHEET

## SECTION I: IDENTIFICATION OF PRODUCT

| | | | |
|---|---|---|---|
| COMPANY: | **Diversity Technologies Corp.** | DATE: | Oct. 31, 2003 |
| | **8750 – 53rd Ave.** | PHONE: | 780-468-4064 |
| | **Edmonton, AB T6E 5G2** | FAX: | 780-469-1899 |
| PRODUCT NAME: | **CALCIUM CHLORIDE 94-97 %**<br>**(HT FINES; HT POWDER; MINIPELLETS)** | | |
| PRODUCT USE: | Oil well drilling fluid & cement additive | | |
| CHEMICAL FAMILY: | Inorganic calcium salt | CAS#: | 10043-52-4 |

## WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

| | |
|---|---|
| WHMIS CLASSIFICATION: | D2B |
| WORKPLACE HAZARD: | Eye irritant |

## TRANSPORTATION OF DANGEROUS GOODS (TDG)

| | |
|---|---|
| PROPER SHIPPING NAME: | Not regulated under TDG |
| TDG CLASSIFICATION: | Not applicable |
| UN NUMBER (PIN): | Not applicable |
| PACKING GROUP: | Not applicable |

## SECTION II: HAZARDOUS INGREDIENTS

| INGREDIENT | PERCENT | CAS NUMBER | $LD_{50}$ Oral-Rat | $LC_{50}$ Inhal-Rat | ACGIH-TLV |
|---|---|---|---|---|---|
| Calcium chloride | 94-97 | 10043-52-4 | 1000 mg/kg | No information | Not established |

## SECTION III: HEALTH HAZARDS

| | |
|---|---|
| ROUTE OF ENTRY: | [XX]EYE CONTACT [XX]SKIN [XX]INHALATION [XX]INGESTION |
| EYE CONTACT: | Solid and concentrated liquid will cause moderate to severe eye irritation with corneal injury that may be slow to heal. When dissolving, the heat produced may cause more intense effects as well as thermal burns. |
| SKIN CONTACT: | Prolonged or repeated contact with the dust may irritate the skin or cause burns especially if skin is moist or if material is confined to skin. |
| INGESTION: | Oral toxicity considered low. Swallowing solids may cause gastrointestinal irritation or ulceration. |

| | |
|---|---|
| INHALATION: | Breathing dust may irritate the nose and throat and cause coughing and chest discomfort. |
| CARCINOGENICTY: | No information available |
| TERATOGENICITY: | No information available |
| REPRODUCTIVE TOXICITY: | No information available |
| MUTAGENICTY: | No information available |
| SYNERGISTIC PRODUCTS: | No information available |

## SECTION IV: FIRST AID MEASURES

| | |
|---|---|
| EYE CONTACT: | Immediately flush with gently flowing warm water for 15 minutes. Obtain medical attention when flushing is complete. |
| SKIN CONTACT: | Wash affected area with soap and water. Remove contaminated clothing and shoes; wash before reuse. If irritation persists, or develops, obtain medical attention. |
| INGESTION: | Do not induce vomiting. Rinse mouth with water. Give 1-2 glasses of water to drink. If spontaneous vomiting occurs, keep head below hips to ensure vomitus is not aspirated, then rinse mouth and readminister water. Obtain medical attention. Never give anything by mouth to an unconscious or convulsing victim. |
| INHALATION: | Move to fresh air. Apply oxygen or artificial respiration if required. If breathing difficulties, or distress, continue obtain medical attention. |

## SECTION V: PHYSICAL DATA

| | | |
|---|---|---|
| APPEARANCE AND ODOUR: | White to off-white powder, odourless | |
| SPECIFIC GRAVITY: | 2.2 | |
| BOILING POINT (C): | 1670 | |
| MELTING POINT (C): | 772 (approx) | |
| SOLUBILITY IN WATER: | Very soluble | pH: 8 – 9 (35% solution) |
| PERCENT VOLATILE BY VOLUME: | Not applicable | |
| EVAPORATION RATE: | Not applicable | |
| VAPOUR PRESSURE (mmHg): | Not applicable | |
| VAPOUR DENSITY (air = 1) | Not applicable | |
| BULK DENSITY: | Not available | |

## SECTION VI: FIRE AND EXPLOSION HAZARD DATA

| | |
|---|---|
| FLASH POINT: | Not applicable |
| FLAMMABLE LIMITS: | Not applicable |

| | |
|---|---|
| EXTINGUISHING MEDIA: | Use media suitable for surrounding fire and packaging. |
| SPECIAL FIRE FIGHTING PRODCEDURES: | Self-contained breathing apparatus required for fire fighting personnel. |
| UNUSUAL FIRE AND EXPLOSION HAZARDS: | Hydrogen chloride is a hazardous combustion product at temperatures in excess of 1600°C. |

## SECTION VII: REACTIVITY DATA

| | |
|---|---|
| STABILITY: | STABLE [XX] UNSTABLE [ ] |
| INCOMPATIBILITY (CONDITIONS TO AVOID): | May react violently with processed lime to produce heat. Corrosive to some metals. Corrosive when wet. Flammable hydrogen may be generated from contact with metals such as zinc or sodium. Avoid contact with sulfuric acid. Heat is generated when mixed with water. Splattering or boiling may occur. |
| CONDITIONS OF REACTIVITY: | Not available |
| HAZARDOUS DECOMPOSITION PRODUCTS: | None |
| HAZARDOUS POLYMERIZATION: | WILL NOT OCCUR [XX] MAY OCCUR [ ] |

## SECTION VIII: PREVENTATIVE MEASURES

SPECIAL PROTECTION INFORMATION

| | |
|---|---|
| RESPIRATORY PROTECTION: | NIOSH/MESA approved dust mask or respirator if high dust levels expected. |
| VENTILATION: | Use local exhaust ventilation, process enclosure or other engineering controls to maintain dust level below TLV. |
| PROTECTIVE GLOVES: | Rubber gloves recommended. |
| EYE PROTECTION: | Chemical goggles recommended. |
| OTHER PROTECTIVE EQUIPMENT (Specify): | Full body covering recommended. Ensure eyewash and safety shower available. |

## PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Wash thoroughly after handling. Avoid contact with eyes, skin, or clothing. Store in a cool, very dry place; material is hygroscopic. Keep container tightly closed when not in use. Heat developed during diluting or dissolving is very high. Use cool water when diluting or dissolving. Empty packaging contains residual hazardous material and should be stored and handled as if full.

## STEPS TO BE TAKEN IN CASE THE MATERIAL IS SPILLED OR RELEASED

Wear suitable protective equipment. Collect uncontaminated material for repacking. Collect contaminated material in an approved container for disposal. Wash residual material with copious amounts of water.

## WASTE DISPOSAL METHOD

Dispose/landfill in accordance with federal, provincial and local regulations. It is the responsibility of the end-user to determine if material meets the criteria of hazardous waste at the time of disposal. Empty containers contain residual chemical and must be disposed of or recycled in accordance with local regulations.

## SECTION IX: PREPARATION

THE INFORMATION CONTAINED HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE.

| | | | |
|---|---|---|---|
| DATE ISSUED: | October 31, 2003 | BY: | Product Safety Committee |
| SUPERSEDES: | April 1, 2002 | | |

**Diversity Technologies Corp. is the parent company of Canamara-United Supply, Hollimex Products and Canamara SDS.**

# Material Safety Data Sheet

| WHMIS (Pictograms) | WHMIS (Classification) | Personal Protective Equipment |
|---|---|---|
|  | Class D-2A: Material causing other toxic effects (VERY TOXIC). |  |

## Section 1. Product and Company Identification

| | | | |
|---|---|---|---|
| **Product Name / Trade name** | **Universal Antifreeze/ Coolant (839D)** 29-3040 | **Associated Product's Item Code** | **35-234C** |
| **Synonym** | Coolant and antifreeze. Antifreeze. | **CAS #** | Mixture. |
| **Chemical Family** | Glycol. | **DSL** | This product and/ or all of its components are on the DSL. |
| **Chemical Formula** | Not applicable. | **Validation Date** | **3/5/2004.** |
| **Manufacturer** | Recochem Inc.<br>850 Montee de Liesse<br>Montreal, Quebec<br>514-341-3550 | **Print Date** | 4/15/2004. |
| **Material Uses** | Industrial applications: Coolant and antifreeze formulations. | **In Case of Emergency** | Recochem Inc.<br>Communications and Regulatory Affairs Department<br>(905) 791-1788 |

## Section 2. Hazardous Ingredients

| Name | CAS # | % by Weight | Exposure Limits | |
|---|---|---|---|---|
| | | | Canadian Values (ACGIH) | U.S. Values (OSHA) |
| Ethylene glycol | 107-21-1 | 90-98 | **ACGIH (Canada, 2002).**<br>CEIL: 100 mg/m$^3$ | Ethylene glycol Not established |

## Section 3. Hazard Identification

**Emergency Overview**

WARNING.

HARMFUL OR FATAL IF SWALLOWED. Possible damage to liver and kidneys.
Heated material can cause thermal burns.
Mist or vapour from heated materials may cause eye, skin and respiratory irritation.

**Potential Acute Health Effects**

**See Section #11: "Toxicological Information" for further human health effects.**

Toxic by ingestion. May cause abdominal discomfort or pain, nausea, vomiting, dizziness, central nervous system effects and coma. Cardiac failure, pulmonary edema and severe kidney damage may develop.
May cause mild eye irritation.
May cause mild skin irritation.
Unlikely to be inhaled because of physical characteristics, however, heated material may produce vapours, which may cause irritation to lungs if inhaled excessively. Inhalation, particularly of mist, may cause irritation of the nose and throat with headache. High vapour concentrations may produce nausea, vomiting, headache, dizziness and irregular eye movement.

**Note to Physician**

The signs and symptoms in ethylene glycol poisoning are those of metabolic acidosis, central nervous system depression and kidney injury. Clinical chemistry may reveal anion-gap metabolic acidosis and uremia. Treatment with ethanol to inhibit the metabolism of glycol to oxalate. Early administration of ethanol may counter the toxic effects of ethylene glycol (cardiopulmonary effects attributed to metabolic acidosis and renal damage).
Hemodialysis or peritoneal dialysis have been of benefit.
Pre-existing skin, eye, and respiratory disorders may be aggravated by exposure to this product.
Treat symptomatically and supportively.

*Continued on Next Page*

## Section 4. First Aid Measures

| | |
|---|---|
| **Eye Contact** | IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. If irritation persists, seek medical attention. |
| **Skin Contact** | Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. If irritation persists, seek medical attention. Wash contaminated clothing before reusing. |
| **Inhalation** | Allow the victim to rest in a well-ventilated area. If irritation persists, seek medical attention. If breathing is difficult, administer oxygen. If victim is not breathing have qualified personnel administer artificial respiration. |
| **Ingestion** | DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. SEEK IMMEDIATE MEDICAL ATTENTION. If medical advice is delayed, and a moderate volume has been swallowed, have individual consume three to four ounces of hard liquor, such as whiskey (antidote is inhibition of alcohol dehydrogenase to prevent kidney damage). |

## Section 5. Fire Fighting Measures

| | |
|---|---|
| **Products of Combustion** | These products are carbon oxides (CO, $CO_2$). |
| **Fire Fighting Media and Instructions** | SMALL FIRE: Use DRY chemicals, $CO_2$, water spray or foam.<br>LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.<br>Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. |
| **Fire Hazards** | When heated to decomposition, it emits acrid smoke and irritating fumes. May be combustible at high temperature. |
| **Explosion Hazards** | Not a product presenting risks of explosion. |

## Section 6. Accidental Release Measures

| | |
|---|---|
| **Small Spill and Leak** | Dilute with water and mop up, or absorb with an inert DRY material and place in an appropriate waste disposal container. |
| **Large Spill and Leak** | Stop leak if without risk. Prevent entry into sewers, basements or confined areas; dike if needed. Absorb with an inert material and put the spilled material in an appropriate waste disposal. Dispose of in accordance with regional regulations. |

## Section 7. Handling and Storage

| | |
|---|---|
| **Handling** | DO NOT swallow.Avoid contact with eyes. Avoid breathing vapours or spray mists. Wear suitable protective clothing. Use in a well ventilated area. Avoid contamination with reactive substances. After handling, always wash hands thoroughly with soap and water. |
| **Storage** | Keep container dry. Keep container tightly closed. Keep in a cool, well-ventilated place. Store in an appropriate container. If the fluid is exposed to excessively high temperatures, thermal degradation can occur, avoid high temperatures or sources of heat during extended storage periods. |

## Section 8. Exposure Controls, Personal Protection

| | |
|---|---|
| **Engineering Controls** | Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location. |
| **Personal Protection** | |
| *Eyes* | Splash goggles. Face shield when handling elevated temperature material. |
| *Body* | Wear suitable protective clothing when handling elevated temperature material. |
| *Respiratory* | Wear appropriate respirator when ventilation is inadequate. |
| *Hands* | Gloves (impervious). Nitrile gloves. Neoprene gloves. |

Continued on Next Page

## Section 9. Physical and Chemical Properties

| | | | |
|---|---|---|---|
| **Physical State and Appearance** | Clear viscous liquid. | **Odour** | Odourless. |
| **Molecular Weight** | Not applicable. | **Taste** | Sweet. |
| **pH (1% Soln/Water)** | 9 to 11 [Basic.] | **Colour** | Green. |
| **Boiling/Condensation Point** | 197°C (386.6°F) | **Volatility** | 0% (w/w). |
| **Melting/Freezing Point** | -13°C (8.6°F) | **Evaporation Rate** | 0.01 compared to Butyl acetate. |
| **Specific Gravity** | 1.115 to 1.145 (Water = 1) | **Odour Threshold** | Not available. |
| **Vapour Pressure** | 0.06 mm of Hg (@ 20°C) | **Viscosity** | Not available. |
| **Vapour Density** | 2.1 (Air = 1) | **Solubility** | Soluble in water, methanol, diethyl ether. |
| **VOC Content** | Not available. | **Other Properties** | Not available. |

| | |
|---|---|
| **The Product is:** | May be combustible at high temperature. |
| **Auto-ignition Temperature** | 400°C (752°F) |
| **Flash Points** | Closed cup: 116°C (240.8°F). (Tagliabue.) Open cup: 115.6°C (240.1°F) (Cleveland). |
| **Flammable Limits** | LOWER: 3.2% UPPER: 15.3% |
| **Fire Hazards in Presence of Various Substances** | Combustible in presence of open flames and sparks. |

## Section 10. Stability and Reactivity

| | |
|---|---|
| **Stability** | The product is stable. |
| **Conditions of Instability** | No additional remark. |
| **Incompatibility with Various Substances** | Reactive with oxidizing agents, acids, alkalis. |

## Section 11. Toxicological Information

| | |
|---|---|
| **Routes of Entry** | Absorbed through skin. Eye contact. Inhalation. Ingestion. |
| **Toxicity to Animals** | Acute oral toxicity (LD50): 5000 mg/kg [Rat.].<br>Acute dermal toxicity (LD50): 9500 mg/kg [Rabbit.]. |

**Acute Effects on Humans**

| | |
|---|---|
| *Eyes* | May cause mild eye irritation. |
| *Skin* | May cause mild skin irritation. Heated material may also cause skin burns with direct contact. |
| *componen* | Unlikely to be inhaled because of physical characteristics, however, heated material may produce vapours, which may cause irritation to lungs if inhaled excessively.<br>Inhalation, particularly of mist, may cause irritation of the nose and throat with headache.<br>High vapour concentrations may produce nausea, vomiting, headache, dizziness and irregular eye movement.<br>Inhalation of mist or vapour from heated material may cause respiratory irritation. |
| *Ingestion* | Toxic by ingestion. HARMFUL OR FATAL IF SWALLOWED.<br>Ethylene glycol is more acutely toxic to humans than to animals. The lethal dose in humans is estimated to be 100ml (3 ounces).<br>May cause abdominal discomfort or pain, nausea, vomiting, dizziness, central nervous system effects and coma.<br>Cardiac failure, pulmonary edema and severe kidney damage may develop.<br>Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however swallowing amounts larger than that may cause serious injury, even death. |

Continued on Next Page

| | |
|---|---|
| **Chronic Effects on Humans** | **CARCINOGENIC EFFECTS**: A4 (Not classifiable for human or animal.) by ACGIH.<br>Ethylene glycol did not cause cancer in long term animal studies.<br>**MUTAGENIC EFFECTS**: In vitro and in vivo mutagenicity studies were negative.<br>**TERATOGENIC EFFECTS**: Teratogenic in mice at levels below maternal toxicity.<br>**DEVELOPMENTAL TOXICITY**: Fetotoxic in mice at levels below maternal toxicity.<br>Excessive exposure may cause central nervous system (CNS) depression, kidney failure and possibly liver effects.<br>Repeated or prolonged exposure to the substance can produce target organs damage.<br>Prolonged and repeated contact with skin can cause drying of the skin resulting in irritation and dermatitis.<br>Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Impaired reproductive, liver, kidney and central nervous system functions from pre-existing disorders may be aggravated by exposure to this product. Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product. |

## Section 12. Ecological Information

| | |
|---|---|
| **Ecotoxicity** | **For accidential discharges into environment, see Section #6: "Accidential Release Measures" for suggested instructions.**<br><br>Ecotoxicity in water:<br>>100 mg/l [IC50, Algae.], 1 hour(s) [Algae].<br>>100 mg/l [LC50, Fish.], 24 hour(s) [Fish].<br>>100 mg/l [EC50, Daphnia.], 4 hour(s) [Daphnia]. Practically non-toxic to aquatic organisms.Biodegradable.<br>Biodegradation under aerobic static laboratory conditions is high.<br>This product is not expected to bioaccumulate through food chains in the environment.<br>Poses a significant risk of oxygen depletion in aquatic systems. |

## Section 13. Disposal Considerations

| | |
|---|---|
| **Waste Information** | Waste must be disposed of in accordance with federal, state or provincial and local environmental control regulations. |

## Section 14. Transport Information

| | |
|---|---|
| **TDG Classification (Canada)** | Not a TDG controlled material. |
| **PIN (Canada)** | Not applicable. |
| **Special Provisions for Transport (Canada)** | Not applicable. |
| **IMDG Classification** | Not controlled under IMDG. |
| **PIN** | Shipping name: Environmentally hazardous substance, liquid, N.O.S (Ethylene glycol) UNNA: UN 3082 PG: III |
| **Marine Pollutant** | Not pollutant. |
| **DOT Classification (U.S.A)** | Not a DOT regulated material (United States). |
| **PIN** | Not applicable. |
| **Special Provisions for Transport (U.S.)** | Regulated Quantity (RQ)= 5000 lbs (2268 kg)<br><br>For bulk shipments equal to or greater than Regulated Quantity (RQ), please adhere to classification as outlined in IMDG Classification section. |

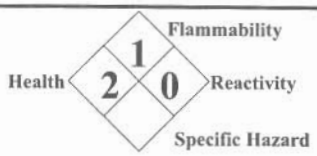
## Section 15. Other Regulatory Information and Pictograms

| | |
|---|---|
| **WHMIS Classification (Canada)** | Class D-2A: Material causing other toxic effects (VERY TOXIC). |
| **HCS Classification (U.S.A.)** | Class: Target organ effects. |
| **U.S.A. Regulatory Lists** | This product and/ or all of its components are on the TSCA inventory list. |

*Continued on Next Page*

| Hazardous Material Information System (U.S.A.) | | |
|---|---|---|
| | Health | 2 |
| | Flammability | 1 |
| | Reactivity | 0 |
| | Personal Protection | B |

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




## Section 16. Other Information

| Validated and verified by Product Development and Technical Coordinator on 3/5/2004. | Printed 4/15/2004. |
|---|---|

**Notice to Reader**

*To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.*
*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.*

**MSDS are available at www.recochem.com**