

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00485

# SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Digestion Solution for COD 20-1500 mg/l Range  
**Catalog Number:** 2125925

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00485  
**Chemical Name:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Alternate CAS No. (for hydrated forms):** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Intended Use:** Laboratory Use Determination of Chemical Oxygen Demand

## 2. HAZARDS IDENTIFICATION

### GHS Classification:

**Hazard categories:** Corrosive to Metals: Met. Corr. 1 Acute Toxicity: Acute Tox. 4-Orl Acute Toxicity: Acute Tox. 4-Inh Skin Corrosion/Irritation: Skin Corr. 1A Germ Cell Mutagenicity: Muta. 1B Carcinogenicity: Carc. 1B Reproductive Toxicity: Repr. 1B Hazardous to the Aquatic Environment: Aquatic Chronic 1

### GHS Label Elements:

DANGER



**Hazard statements:** May be corrosive to metals. Harmful if swallowed. Harmful if inhaled. Causes severe skin burns and eye damage. May cause genetic defects. May cause cancer. May damage fertility. Suspected of damaging the unborn child. Very toxic to aquatic life with long lasting effects.

**Precautionary statements:** Obtain special instructions before use. Do not breathe dust/fume/gas/mist/vapours/spray. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician. IF INHALED: Remove victim/person to fresh air and keep at rest in a position comfortable for breathing. Handle environmental release according to local, state, federal, provincial requirements. Dispose of contents/container according to state, local, federal or national regulations.

### HMIS:

**Health:** 3\*

**Flammability:** 0

**Reactivity:** 2

**Protective Equipment:** X - See protective equipment, Section 8.

### NFPA:

**Health:** 3

**Flammability:** 0

**Reactivity:** 2

**Symbol:** Water Reactive

**WHMIS Hazard Classification:** Class D, Division 1, Subdivision A - Very toxic materials (immediate effects) Class D, Division 2, Subdivision A - Very toxic materials (other toxic effects) Class E - Corrosive material  
**WHMIS Symbols:** Acute Poison Corrosive

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### 3. COMPOSITION / INFORMATION ON INGREDIENTS

**Hazardous Components according to GHS:**

**Sulfuric Acid**

**CAS Number:** 7664-93-9

**Chemical Formula:** H<sub>2</sub>SO<sub>4</sub>

**GHS Classification:** Met. Corr. 1 H290; Skin Corr. 1A, H314; Aquatic Acute 3, H402

**Percent Range:** 85.0 - 95.0

**Percent Range Units:** weight / weight

**PEL:** 1 mg/m<sup>3</sup>

**TLV:** 1 mg/m<sup>3</sup>

**WHMIS Symbols:** Acute Poison Corrosive

**Dichromic Acid**

**CAS Number:** 13530-68-2

**Chemical Formula:** H<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>

**GHS Classification:** Ox. Sol. 2, H272; Acute Tox. 3-Orl, H301; Acute Tox. 4-Derm, H312; Skin Corr. 1B, H314; Acute Tox. 2-Inh, H330; Muta. 1B, H340; Carc. 1B, H350; Repr. 1B, H360; STOT Rep. 1, H372; Aquatic Chronic 1, H410

**Percent Range:** 0.1 - 1.0

**Percent Range Units:** weight / weight

**PEL:** 5 µg/m<sup>3</sup> (0.00235 ppm Cr<sup>+6</sup>), 8 Hr TWA; Action Level is 2.5 µg/m<sup>3</sup> (0.00117 ppm), 8 Hr TWA

**TLV:** 0.05 mg/m<sup>3</sup> (0.0235 ppm as Cr<sup>+6</sup>)

**WHMIS Symbols:** Corrosive Oxidizing Acute Poison

**Mercuric Sulfate**

**CAS Number:** 7783-35-9

**Chemical Formula:** HgSO<sub>4</sub>

**GHS Classification:** Acute Tox. 2-Orl, H301; Acute Tox. 1-Derm., H311; Acute Tox. 2-Inh, 330; Skin Irrit. 2, H315; Skin Sens. 1, H317; Eye Irrit. 2, H319; STOT RE 2, H373; Aq. Chron 1, H410

**Percent Range:** 0.5 - 2

**Percent Range Units:** weight / weight

**PEL:** 2 mg Hg/m<sup>3</sup>

**TLV:** Skin: 0.025 mg Hg/m<sup>3</sup>

**WHMIS Symbols:** Acute Poison Corrosive

**Silver Sulfate**

**CAS Number:** 10294-26-5

**Chemical Formula:** Ag<sub>2</sub>SO<sub>4</sub>

**GHS Classification:** Eye Dam. 1, H318; Aquatic Chronic 1, H410

**Percent Range:** 0.5 - 2

**Percent Range Units:** weight / weight

**PEL:** 0.01 mg/m<sup>3</sup> (Ag)

**TLV:** 0.01 mg/m<sup>3</sup> (Ag)

**WHMIS Symbols:** Not applicable

**Hazardous Components according to GHS:** No

**Demineralized Water**

**CAS Number:** 7732-18-5

**Chemical Formula:** H<sub>2</sub>O

**GHS Classification:** Not a dangerous substance according to GHS.

**Percent Range:** 1.0 - 10.0

**Percent Range Units:** weight / weight

**PEL:** Not established

**TLV:** Not established

**WHMIS Symbols:** Not applicable

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## 4. FIRST AID

**General Information:** In the event of exposure, show this Material Safety Data Sheet and label (where possible) to a doctor.

**Advice to doctor:** Treat symptomatically.

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Remove contaminated clothing. Wash skin with plenty of water for 15 minutes. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen. Call physician.

**Ingestion (First Aid):** Do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call physician immediately.

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## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Not Flammable, but reacts with most metals to form flammable hydrogen gas. During a fire, corrosive and toxic gases may be generated by thermal decomposition.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance. Water runoff can cause environmental damage. Dike and collect water used to fight fire.

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Extinguishing Media NOT To Be Used:** Not applicable

**Fire / Explosion Hazards:** Contact with metals gives off hydrogen gas which is flammable. May react violently with: strong bases, water

**Hazardous Combustion Products:** This material will not burn.

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## 6. ACCIDENTAL RELEASE MEASURES

### **Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

**Containment Technique:** Releases of this material may contaminate the environment. Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment. Dike the spill to contain material for later disposal.

**Clean-up Technique:** Mercury and its compounds are extremely toxic! Be extremely careful not to contact the spill or breathe any vapors. If permitted by regulation, absorb spilled liquid with non-reactive sorbent material. Dispose of all mercury contaminated material at a government approved hazardous waste facility. Dispose of material in government approved hazardous waste facility. Decontaminate area with commercially available mercury absorbing compounds. Otherwise, pick up spill for disposal and place in a closed container. Dispose of in accordance with local, state and federal regulations or laws.

**Evacuation Procedure:** Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. Deny access to unnecessary and unprotected personnel. Remain up-wind from spilled material. If conditions warrant, increase the size of the evacuation.

**DOT Emergency Response Guide Number:** 137

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## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes, skin, clothing. Do not breathe mist or vapors. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: light, contamination by organic materials (will affect product stability), heat

**Flammability Class:** Not applicable

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this product. Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product. Refer to the OSHA Standard at 29CFR1910.1026 for Cr (VI) (See Federal Register 28 February 2006 Page 10100.)

**Personal Protective Equipment:**

**Eye Protection:** chemical splash goggles

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** laboratory fume hood and / or adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Use with adequate ventilation. Protect from: heat light organic materials Keep away from: alkalies metals other combustible materials oxidizers reducers

**TLV:** Not established

**PEL:** Not established

**For Occupational Exposure Limits (OEL) for ingredients, see section 3 - Composition/Information on Ingredients.:**

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Turbid, light orange liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** Not determined

**Odor Threshold:** Not applicable

**pH:** < 0.5

**Metal Corrosivity:**

**Corrosivity Classification:** Classified as corrosive to metals.

**Steel:** Corrosive

**Aluminum:** Corrosive

**Specific Gravity/ Relative Density (water = 1; air = 1):** > 1.0

**Viscosity:** Not determined

**Solubility:**

**Water:** Miscible

**Acid:** Not determined

**Other:** Not determined

**Partition Coefficient (n-octanol / water):** Not determined

**Coefficient of Water / Oil:** Not applicable

**Melting Point:** < 0 °C (< 32 °F)

**Decomposition Temperature:** Not determined

**Boiling Point:** > 100 °C (> 212 °F)

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** Not determined

**Evaporation Rate (water = 1):** Not determined

**Volatile Organic Compounds Content:** Not applicable

**Flammable Properties:** Not Flammable, but reacts with most metals to form flammable hydrogen gas. During a fire, corrosive and toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Explosive Properties:**

Not classified according to GHS criteria.

**Oxidizing Properties:**

Not classified according to GHS criteria.

**Reactivity Properties:**

Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

**Gas under Pressure:**

Not classified according to GHS criteria.

Not classified as gas under pressure according to GHS.

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Mechanical Impact:** None reported

**Static Discharge:** None reported.

**Reactivity / Incompatibility:** May react violently in contact with: caustics

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: mercury compounds  
sulfur oxides

**Conditions to Avoid:** Exposure to light or contamination by organic materials will affect this product's stability.

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## 11. TOXICOLOGICAL INFORMATION

**Toxicokinetics, Metabolism and Distribution:** No information available

**Toxicologically Synergistic Products:** None reported

**Acute Toxicity:** Acute Toxicity Estimate (ATE) - Calculated from Ingredient Toxicity Data and/or Toxicological Testing  
Route Data Given Below

Outside testing: Oral Rat (male) LD50 = 428 mg/kg; Oral Rat (female) LD50 = 360 mg/kg.

ATE(mix) Dermal LD50 = 34898 mg/kg.

ATE(mix) LC50 = 15.7 mg/m<sup>3</sup>

**Specific Target Organ Toxicity - Single Exposure (STOT-SE):** Based on classification principles, the classification criteria are not met.

**Specific Target Organ Toxicity - Repeat Exposure (STOT-RE):** Based on classification principles, the classification criteria are not met.

**Skin Corrosion/Irritation:** Corrosive to skin.

**Eye Damage:** Corrosive to eyes.

**Sensitization:** Based on classification principles, the classification criteria are not met.

**Carcinogenic, Mutagenic or Reproductive Toxin Effects:** Contains Listed Carcinogen Contains a reproductive toxin.  
Contains Chromic Acid

An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen

Hexavalent Chromium Compounds Sulfuric Acid - The IARC evaluation was based on exposure to the mist or vapor of concentrated sulfuric acid generated during chemical processes.

An ingredient of this mixture is: NTP Listed Group 1: Recognized Carcinogen

Hexavalent Chromium Compounds Sulfuric Acid Mist or Vapor

An ingredient of this product is an OSHA listed carcinogen.

Hexavalent chromium (Cr<sup>6</sup>) compounds

**Symptoms/Effects:**

**Ingestion (EC):** Harmful Causes: severe burns May cause: abdominal pain circulatory disturbances diarrhea  
loosening of the teeth nausea vomiting rapid pulse and respirations toxic nephritis (inflammation of the kidneys)  
shock collapse kidney damage death Toxic

**Inhalation (EC):** Causes: severe burns May cause: difficult breathing mouth soreness teeth erosion Effects similar to those of ingestion.

**Skin Absorption (EC):** Toxic Will be absorbed through the skin. Effects similar to those of ingestion

**Chronic Effects:** Chronic overexposure may cause destruction of any tissue contacted difficult breathing mouth  
soreness erosion of the teeth accumulation of silver in body tissues which causes a slate-gray to bluish discoloration.  
cancer Chromate and dichromate salts may cause ulceration and perforation of the nasal septum, severe liver damage,  
central nervous system effects, and lung cancer. Mercury is a general protoplasmic poison; it circulates in the blood and  
is stored in the liver, kidneys, spleen and bones. Main symptoms are sore mouth, tremors and psychic disturbances.

**Medical Conditions Aggravated:** Pre-existing: Respiratory conditions Eye conditions Skin conditions Allergies or  
sensitivity to chromates or chromic acid. Allergies or sensitivity to mercury.

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** Aquatic Toxicity Estimation - Additive Method: 48 hr Crustacea EC50 = 0.0045 mg/L.

Do not place in landfill. Recycle appropriately. Do not release into the environment.

Method Used for Estimation of Aquatic Toxicity of Mixture Additivity Method (Acute Toxicity) and Summation Method  
M-factor (Multiplier) for highly toxic ingredients: 100

**Ingredient Ecological Information:** Silver sulfate: 48 hr Crustacea EC50 = 0.0045 mg/L. Mercuric sulfate: 14 d  
Pseudokirchneriella subcapitata = 0.033 mg/L. Chromic acid: 48 hr Daphnia magna EC50 = 0.8 mg/L.

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## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D002 D007 D009 D011

**Special Instructions (Disposal):** Dispose of all mercury contaminated material at an E.P.A. hazardous waste facility.

Dispose of material in an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

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## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Sulphuric Acid

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**DOT Hazard Class:** 8

**DOT Subsidiary Risk:** NA

**DOT ID Number:** UN1830

**DOT Packing Group:** II

**T.D.G.:**

**T.D.G. Proper Shipping Name:** Sulphuric Acid

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**T.D.G. Hazard Class:** 8

**T.D.G. Subsidiary Risk:** NA

**PIN:** 1830

**Group:** II

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Sulphuric Acid

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**ICAO Hazard Class:** 8

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** UN1830

**ICAO Packing Group:** II

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Sulphuric Acid

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**I.M.O. Hazard Class:** 8

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** UN1830

**I.M.O. Packing Group:** II

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

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## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard Reactive

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Mercury compounds, Silver compounds, Chromium Compounds, Sulfuric acid (acid aerosols including mists, vapors, gas, fog and other airborne forms).

**302 (EHS) TPQ (40 CFR 355):** Sulfuric Acid 1000 lbs.

**304 CERCLA RQ (40 CFR 302.4):** Chromic acid and Mercuric sulfate (each) = 10 lbs. Sulfuric Acid 1000 lbs.

**304 EHS RQ (40 CFR 355):** Sulfuric Acid - RQ 1000 lbs.



**Clean Water Act (40 CFR 116.4):** Chromic acid - RQ 10 lbs. Mercuric sulfate - RQ = 10 lbs. (4.54 kgs.) Sulfuric acid - RQ 1000 lbs.

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**State Regulations:**

**California Prop. 65:** WARNING - This product contains a chemical known to the State of California to cause cancer. WARNING - This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

**Identification of Prop. 65 Ingredient(s):** Chromium (hexavalent compounds); Mercury and mercury compounds.

**California Perchlorate Rule CCR Title 22 Chap 33:** Not applicable

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

**Canadian Inventory Status:** All ingredients of this product are DSL Listed.

**EEC Inventory Status:** All ingredients used to make this product are listed on EINECS / ELINCS.

**Australian Inventory Status:** All ingredients are listed.

**New Zealand (ERMA) Inventory Status:** All components either listed or exempt.

**Korean (TCCL) Inventory Status:** All components of this product are either listed, listed as the anhydrous compound or exempt.

**Japan (CHRIIP) Inventory Status:** All components either listed or exempt.

**China (PRC) Inventory Status:** All components either listed or exempt.

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## 16. OTHER INFORMATION

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Outside Testing. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Technical Judgment. Verschueren, Karel. Handbook of Environmental Data on Organic Chemicals. New York: Van Nostrand Reinhold Co., 1977.

**Complete Text of H phrases referred to in Section 3:** H290 May be corrosive to metals. H302 Harmful if swallowed. H311 Toxic in contact with skin. H314 Causes severe skin burns and eye damage. H340 May cause genetic defects. H350 May cause cancer. H373 May cause damage to organs through prolonged or repeated exposure. H410 Very toxic to aquatic life with long lasting effects.

**Revision Summary:** Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

**Date of MSDS Preparation:**

**Day:** 12

**Month:** January

**Year:** 2015

**MSDS Prepared:** MSDS prepared by Product Compliance Department extension 3350

**CCOHS Evaluation Note:** This product has been classified and labeled in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3). It is offered under the interim policy that was established by Health Canada permitting use of GHS-formatted safety data sheets in Canada prior to revision of CPR to GHS. It is offered under exemption from WHMIS labeling as specified in the Controlled Products Regulation (CPR) Section 17.

**WHMIS Evaluation Note:** This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

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**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE.  
HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA  
OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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