

# SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product Name:** Digestion Solution for COD 0-15000 ppm Range  
**Catalog Number:** 2415925

HACH LANGE GmbH  
Willstätterstrasse 11  
40549 Düsseldorf, Germany  
+49-(0)211-52880

Emergency Telephone Numbers:  
(Poison Information Center Main)  
(+49 (0) 6131 19240) 24 HR

**SDS Number:** M00525

**Chemical Name:** Not applicable

**Chemical Formula:** Not applicable

**Chemical Family:** Not applicable

**Use of the substance/preparation:** Determination of Chemical Oxygen Demand

**CAS No.:** Not applicable

**Hazard:** Toxic. Causes severe burns. Cumulative poison. Recognized carcinogen.

**Date of MSDS Preparation:**

**Day:** 7

**Month:** 01

**Year:** 2005

**Additional Emergency Response Numbers:** Austria: +49 (0)6131 19240, Belgium: +32-(0)70-245245, France: +33-(0)1-40370404, Italy: +39-02-66101029, Netherlands: +31-(0)30-2748888, Switzerland: +41-(0)1-2515151

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Mercuric Sulfate

**EEC Number:** 2319925

**CAS No.:** 7783-35-9 Contains Mercury. Dispose Per Local, State or Federal Laws.

**Percent Range:** 0,1 - 1,0

**Percent Range Units:** weight / weight

**Ingredient EEC Symbol:** T+ - VERY TOXIC N - Dangerous for the Environment

**Ingredient R phrase(s) (R phrase details given in Heading 16):** R 26/27/28 R 33 R 50/53

**TLV:** 0,05 mg/m<sup>3</sup> (Hg)

**PEL:** 0,1 mg/m<sup>3</sup> (Hg)

**EU Occupational Exposure Limits:** 0,1 mg/m<sup>3</sup>

### Demineralized Water

**EEC Number:** 2317912

**CAS No.:** 7732-18-5

**Percent Range:** 45,0 - 55,0

**Percent Range Units:** weight / weight

**Ingredient EEC Symbol:** Not applicable

**Ingredient R phrase(s) (R phrase details given in Heading 16):** Not applicable

**TLV:** Not established

**PEL:** Not established

**EU Occupational Exposure Limits:** Not established

### Chromic Acid

**EEC Number:** 2368815

**CAS No.:** 13530-68-2

**Percent Range:** 0,1 - 1,0

**Percent Range Units:** weight / weight

**Ingredient EEC Symbol:** T - TOXIC

**Ingredient R phrase(s) (R phrase details given in Heading 16):** R 49 R 52/53  
**TLV:** 0,05 mg/m<sup>3</sup> (Cr<sup>+6</sup>)  
**PEL:** 0,5 mg/m<sup>3</sup> (Cr<sup>+6</sup>), Ceiling; Proposed: 1µg Cr<sup>6</sup>/m<sup>3</sup>, TWA (4 Oct FR Pg 59305).  
**EU Occupational Exposure Limits:** 0,05 mg/m<sup>3</sup> (as Cr<sup>+6</sup>)

#### **Silver Sulfate**

**EEC Number:** 2336537  
**CAS No.:** 10294-26-5  
**Percent Range:** 0,1 - 1,0  
**Percent Range Units:** weight / weight  
**Ingredient EEC Symbol:** Not applicable  
**Ingredient R phrase(s) (R phrase details given in Heading 16):** Not applicable  
**TLV:** 0,01 mg/m<sup>3</sup> (Ag)  
**PEL:** 0,01 mg/m<sup>3</sup> (Ag)  
**EU Occupational Exposure Limits:** 0,01 mg/m<sup>3</sup>

#### **Sulfuric Acid**

**EEC Number:** 2316395  
**CAS No.:** 7664-93-9  
**Percent Range:** 45,0 - 55,0  
**Percent Range Units:** weight / weight  
**Ingredient EEC Symbol:** C - CORROSIVE  
**Ingredient R phrase(s) (R phrase details given in Heading 16):** R 35  
**TLV:** 1 mg/m<sup>3</sup> (TWA); 3 mg/m<sup>3</sup> (STEL)  
**PEL:** 1 mg/m<sup>3</sup>  
**EU Occupational Exposure Limits:** 0,1 mg/m<sup>3</sup>

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### **3. HAZARDS IDENTIFICATION**

#### **Emergency Overview:**

**Appearance:** Turbid, light orange liquid

**Odor:** None

**EU Symbols:** T - TOXIC C - CORROSIVE

**R PHRASES:** R 49: May cause cancer by inhalation. R 20/21/22: Harmful by inhalation, in contact with skin and if swallowed. R 33: Danger of cumulative effects. R 35: Causes severe burns. R 52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

#### **Protective Equipment:**

##### **Potential Health Effects:**

**Eye Contact (EC):** Causes severe burns

**Skin Contact (EC):** Causes severe burns

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

**Target Organs (SA E):** Central nervous system Kidneys

**Ingestion (EC):** Causes: May cause: severe burns 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

**Target Organs (Ing E):** Central nervous system Kidneys

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

**Target Organs (Inh E):** Central nervous system Kidneys Lungs Teeth

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

**Chronic Effects:** Chronic overexposure may cause destruction of any tissue contacted erosion of the teeth mouth soreness chronic irritation or inflammation of the lungs accumulation of silver in body tissues which causes a slate-gray to bluish discoloration. cancer

#### **Cancer / Reproductive Toxicity Information:**

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.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental teratogen.

**Toxicologically Synergistic Products:** None reported

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#### 4. FIRST AID MEASURES

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

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

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

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

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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.

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

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

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

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

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

**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.

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#### 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Releases of this material may contaminate the environment. Stop spilled material from being released to the environment. Absorb spilled liquid with non-reactive sorbent material. 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. Absorb spilled liquid with non-reactive sorbent material. 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. Decontaminate area with commercially available mercury absorbing compounds.

**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.

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#### 7. HANDLING AND 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 Store at 10 - 30°C.

**Special Packaging Instructions:** Not applicable

**Use of the substance/preparation:** Determination of Chemical Oxygen Demand

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#### 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** chemical splash goggles  
**Skin / Hand Protection:** disposable latex gloves lab coat  
**Inhalation Protection:** laboratory fume hood  
**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Use with adequate ventilation. Protect from: light organic materials heat Keep away from: alkalies metals other combustible materials oxidizers reducers  
**TLV:** Not established  
**PEL:** Not established  
**EU Occupational Exposure Limits:** Not established

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Turbid, light orange liquid  
**Physical State:** Liquid  
**Odor:** None  
**pH:** < 0,5  
**Vapor Pressure:** Not determined  
**Vapor Density (air = 1):** Not determined  
**Boiling Point:** 99°C (210°F)  
**Melting Point:** freezes at -72°C (-98°F)  
**Flash Point:** Not applicable  
**Method:** Not applicable  
**Autoignition Temperature:** Not applicable  
**Flammability Limits:**  
**Lower Explosion Limits:** Not applicable  
**Upper Explosion Limits:** Not applicable  
**Specific Gravity (water = 1):** 1,550  
**Evaporation Rate (water = 1):** Not determined  
**Volatile Organic Compounds Content:** None  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
**Water:** Miscible  
**Acid:** Not determined  
**Other:** Not determined  
**Metal Corrosivity:**  
**Steel:** 0,163 in/yr (4,14 mm/yr)  
**Aluminum:** 3,92 in/yr (99,6 mm/yr)

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Exposure to light or contamination by organic materials will affect this product's stability.  
**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  
**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
**LD50:** None reported  
**LC50:** None reported  
**Dermal Toxicity Data:** None reported  
**Skin and Eye Irritation Data:** None reported  
**Mutation Data:** None reported  
**Reproductive Effects Data:** None reported  
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**Ingredient Toxicological Data:** Sulfuric Acid: Oral rat LD<sub>50</sub> = 2140 mg/kg, Inhalation rat LC<sub>50</sub> = 87 ppm/4 hr; Chromic Acid: Oral rat LD<sub>50</sub> = 80 mg/kg.

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.

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

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## 13. DISPOSAL CONSIDERATIONS

**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

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

**I.C.A.O. Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, N.O.S.

(Sulphuric Acid/Chromic Acid Solution)

**ICAO Hazard Class:** 8

**ICAO Subsidiary Risk:** NA

**ICAO UN/ID Number:** UN3264

**ICAO Packing Group:** II

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, N.O.S.

(Sulphuric Acid/Chromic Acid Solution)

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

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

**I.M.O. UN Number:** UN3264

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

**A.D.R.:**

**A.D.R. Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, N.O.S.

(Sulphuric Acid/Chromic Acid Solution)

**A.D.R. Hazard Class:** 8

**A.D.R. Subsidiary Risk:** NA

**A.D.R. UN-Number:** 3264

**A.D.R. Packing Group:** II

**Additional Information:** This product may be shipped as part of a chemical kit composed of various compatible dangerous goods for analytical or testing purposes. This kit would have the following classification: Proper Shipping Name: Chemical Kit Hazard Class: 9 UN Number 3316

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## 15. REGULATORY INFORMATION

**National Inventories:**

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

**EEC Number:** Not applicable

**EEC LABEL COPY:**

**EU Symbols:** T - TOXIC C - CORROSIVE

**R PHRASES:** R 49: May cause cancer by inhalation. R 20/21/22: Harmful by inhalation, in contact with skin and if swallowed. R 33: Danger of cumulative effects. R 35: Causes severe burns. R 52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**S PHRASES:** S 53: Avoid exposure - obtain special instructions before use. S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S 36/37/39: Wear suitable protective clothing, gloves and eye/face protection. S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

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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. Lefevre, Marc J. First Aid Manual for Chemical Accidents, 2nd Ed. New York: Van Nostrand Reinhold Company, 1989. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Technical Judgment. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Verschuere, Karel. Handbook of Environmental Data on Organic Chemicals. New York: Van Nostrand Reinhold Co., 1977.

**R PHRASES:** R 49: May cause cancer by inhalation. R 20/21/22: Harmful by inhalation, in contact with skin and if swallowed. R 33: Danger of cumulative effects. R 35: Causes severe burns. R 52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Use of the substance/preparation:** Determination of Chemical Oxygen Demand

**Revision Summary:** Updates in Section(s) 14,

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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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