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MSDS No: M01739

# SAFETY DATA SHEET

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

**Product Name:** Acid Digestion Vials for High Range TOC  
**Catalog Number:** 2760400

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:** M01739

**Chemical Name:** Not Applicable

**Chemical Formula:** Not Applicable

**Chemical Family:** Not applicable

**Use of the substance/preparation:** Digestion reagent

**CAS No.:** Not Applicable

**Hazard:** Carcinogen. Causes eye burns.

**Date of MSDS Preparation:**

**Day:** 13

**Month:** 01

**Year:** 2006

**Additional Emergency Response Numbers:** Austria: +49 (0)6131 19240, Belgium: +32-(0)70-245245, France: +33 (0)1-40370404, Italy: +39-0266101029, Netherlands: +31 -(0)30-2748888, Switzerland: +41-(0)1-2515151

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Demineralized Water

**EEC Number:** 2317912

**CAS No.:** 7732185

**Percent Range:** 90,0 - 100,0

**Percent Range Units:** volume / volume

**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

### Sulfuric Acid

**EEC Number:** 2316395

**CAS No.:** 766499

**Percent Range:** 1,0 - 10,0

**Percent Range Units:** weight / volume

**Ingredient EEC Symbol:** Xi - IRRITATING

**Ingredient R phrase(s) (R phrase details given in Heading 16):** R 36

**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>

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, colorless  
**Odor:** Acidic  
**EU Symbols:** Xi - IRRITATING  
**R PHRASES:** R 36: Irritating to eyes.

**Protective Equipment:**

**Potential Health Effects:**

**Eye Contact (EC):** Causes irritation

**Skin Contact (EC):** No effects are anticipated

**Skin Absorption (EC):** None Reported

**Target Organs (SA E):** None Reported

**Ingestion (EC):** Causes: irritation of the mouth and esophagus May cause: vomiting diarrhea

**Target Organs (Ing E):** None Reported

**Inhalation:** May cause: respiratory tract irritation teeth erosion mouth soreness difficult breathing

**Target Organs (Inh E):** Lungs

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Respiratory conditions

**Chronic Effects:** Chronic overexposure may cause erosion of the teeth chronic irritation or inflammation of the lungs cancer

**Cancer / Reproductive Toxicity Information:**

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

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:** None reported

**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.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air.

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## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn. During a fire, irritating and highly toxic gases may be generated by thermal decomposition.

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

**Fire / Explosion Hazards:** This product will not burn or explode.

**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.

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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:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

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## 7. HANDLING AND STORAGE

**Handling:** Avoid contact with eyes. Do not breathe mist or vapors. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product. Wash thoroughly after handling.

**Storage:** Store between 10° and 25°C.

**Special Packaging Instructions:** Not applicable

**Use of the substance/preparation:** Digestion reagent

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Use general ventilation to minimize exposure to mist, vapor or dust. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

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

**Inhalation Protection:** laboratory fume hood and / or half-face respirator with organic vapor / acid gas cartridge

**Precautionary Measures:** Avoid contact with: eyes skin. Do not breathe: mist/vapor. Use with adequate ventilation.

Protect from: heat

**TLV:** Not Established

**PEL:** Not Established

**EU Occupational Exposure Limits:**

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless

**Physical State:** Liquid

**Odor:** Acidic

**pH:** < 0,5

**Vapor Pressure:** Not Determined

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

**Boiling Point:** ~ 100 °C

**Melting Point:** Not Determined

**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):** Not Determined

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

**Volatile Organic Compounds Content:** Not Applicable

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

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not Determined

**Metal Corrosivity:**

**Steel:** Not Determined

**Aluminum:** Not Determined

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## 10. STABILITY / REACTIVITY

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

**Conditions to Avoid:** Extreme temperatures. Exposure to air. Heating to decomposition.

**Reactivity / Incompatibility:** Incompatible with: alkalies oxidizers reducers

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: 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:* Skin Testing with a 10% H<sub>2</sub>SO<sub>4</sub> solution shows no irritation.

*Mutation Data:* None Reported

*Reproductive Effects Data:* None Reported

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***Ingredient Toxicological Data:*** Sulfuric Acid: Oral Rat LD50 = 2140 mg/kg, Inhalation Rat LC50 = 87 ppm/4 hours

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

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:*** Sulfuric Acid: The 48-Hour TLm in flounder is 100-300 ppm.

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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:*** Not Currently Regulated

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***ICAO Hazard Class:*** NA

***ICAO Subsidiary Risk:*** NA

***ICAO UN/ID Number:*** NA

***ICAO Packing Group:*** NA

***I.M.O.:***

***I.M.O. Proper Shipping Name:*** Not Currently Regulated

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

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

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

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

***A.D.R.:***

***A.D.R. Proper Shipping Name:*** Not Currently Regulated

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

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

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

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

***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:* Xi - IRRITATING

*R PHRASES:* R 36: Irritating to eyes.

*S PHRASES:* S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

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## 16. OTHER INFORMATION

*References:* TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. In-house information. Technical Judgment. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. Vendor Information. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987.

*R PHRASES:* R 36: Irritating to eyes.

*Use of the substance/preparation:* Digestion reagent

*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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(970) 669-3050

MSDS No: M01740

## SAFETY DATA SHEET

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

**Product Name:** Mid/High Range TOC Indicator Ampules  
**Catalog Number:** 2789610

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:** M01740  
**Chemical Name:** Not Applicable  
**Chemical Formula:** Not Applicable  
**Chemical Family:** Not applicable  
**Use of the substance/preparation:** Indicator  
**CAS No.:** Not Applicable  
**Hazard:** Practically non-toxic. No effects anticipated.  
**Date of MSDS Preparation:**  
**Day:** 13  
**Month:** 01  
**Year:** 2006

**Additional Emergency Response Numbers:** Austria: +49 (0)6131 19240, Belgium: +32-(0)70-245245, France: +33 (0)1-40370404, Italy: +39-0266101029, Netherlands: +31 -(0)30-2748888, Switzerland: +41-(0)1-2515151

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Demineralized Water

**EEC Number:** 2317912  
**CAS No.:** 7732185  
**Percent Range:** > 90,0  
**Percent Range Units:** volume / volume  
**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

#### Other components, each

**EEC Number:** Not applicable  
**CAS No.:** Not applicable  
**Percent Range:** < 1,0  
**Percent Range Units:** weight / volume  
**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

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, blue liquid  
**Odor:** None  
**EU Symbols:** Not applicable  
**R PHRASES:** Not applicable

**Protective Equipment:**

**Potential Health Effects:**

**Eye Contact (EC):** No effects are anticipated  
**Skin Contact (EC):** No effects are anticipated  
**Skin Absorption (EC):** No effects anticipated  
**Target Organs (SA E):** Not applicable  
**Ingestion (EC):** No Effects Anticipated  
**Target Organs (Ing E):** Not applicable  
**Inhalation:** No effects anticipated  
**Target Organs (Inh E):** Not applicable  
**Medical Conditions Aggravated:** None reported  
**Chronic Effects:** No effects anticipated  
**Cancer / Reproductive Toxicity Information:**  
This product does NOT contain any IARC listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported  
**Toxicologically Synergistic Products:** None reported

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#### 4. FIRST AID MEASURES

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.  
**Skin Contact (First Aid):** Wash skin with plenty of water.  
**Ingestion (First Aid):** Give large quantities of water. If you feel unwell, contact a physician.  
**Inhalation:** None required.

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#### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.  
**Hazardous Combustion Products:** This material will not burn.  
**Fire / Explosion Hazards:** This product will not burn or explode.  
**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.

---

#### 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:** Absorb spilled liquid with non-reactive sorbent material.  
**Clean-up Technique:** Flush the spilled material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.  
**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

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#### 7. HANDLING AND STORAGE

**Handling:** Avoid contact with eyes. Maintain general industrial hygiene practices when using this product.  
**Storage:** Keep container tightly closed when not in use. Protect from: heat  
**Special Packaging Instructions:** Not applicable  
**Use of the substance/preparation:** Indicator

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin / Hand Protection:** Not applicable

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Wash thoroughly after handling. Protect from: heat

**TLV:** Not Established

**PEL:** Not Established

**EU Occupational Exposure Limits:** Not established

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, blue liquid

**Physical State:** Liquid

**Odor:** None

**pH:** 10,0

**Vapor Pressure:** Not Determined

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

**Boiling Point:** Not Determined

**Melting Point:** Not Determined

**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):** Not Determined

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

**Volatile Organic Compounds Content:** Not Applicable

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

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not Determined

**Metal Corrosivity:**

**Steel:** Not Determined

**Aluminum:** Not Determined

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## 10. STABILITY / REACTIVITY

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

**Conditions to Avoid:** Heat Evaporation

**Reactivity / Incompatibility:** None reported

**Hazardous Decomposition:** None reported

**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

**Ingredient Toxicological Data:** --

No toxicological data available for the ingredients of this product.

This product does NOT contain any IARC listed chemicals.

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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.

---

## 14. TRANSPORT INFORMATION

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

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

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**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO UN/ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

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

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

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

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

**A.D.R.:**

**A.D.R. Proper Shipping Name:** Not Currently Regulated

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

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

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

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

**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:** Not applicable

**R PHRASES:** Not applicable

**S PHRASES:** Not applicable

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## 16. OTHER INFORMATION

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Technical Judgment. In-house information.

**R PHRASES:** Not applicable

**Use of the substance/preparation:** Indicator

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

**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.

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MSDS No: M00039

## SAFETY DATA SHEET

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

**Product Name:** TOC Persulfate  
**Catalog Number:** 2790166

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:** M00039

**Chemical Name:** Peroxydisulfuric Acid, Dipotassium Salt

**Chemical Formula:** K<sub>2</sub>S<sub>2</sub>O<sub>8</sub>

**Chemical Family:** Oxidizing Agents

**Use of the substance/preparation:** Laboratory Reagent

**CAS No.:** 7727-21-1

**Hazard:** Causes severe eye irritation. Oxidizer. Allergen

**Date of MSDS Preparation:**

**Day:** 12

**Month:** 01

**Year:** 2006

**Additional Emergency Response Numbers:** Austria: +49 (0)6131 19240, Belgium: +32-(0)70-245245, France: +33 (0)1-40370404, Italy: +39-0266101029, Netherlands: +31 -(0)30-2748888, Switzerland: +41-(0)1-2515151

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Potassium Persulfate

**EEC Number:** 2317818

**CAS No.:** 7727-21-1

**Percent Range:** 100,0

**Percent Range Units:** weight / weight

**Ingredient EEC Symbol:** O - Oxidizing Xn - HARMFUL

**Ingredient R phrase(s) (R phrase details given in Heading 16):** R 8 R 22

**TLV:** 5 mg/m<sup>3</sup>

**PEL:** Not established

**EU Occupational Exposure Limits:** 3 mg/m<sup>3</sup>, Inhalable dust

### 3. HAZARDS IDENTIFICATION

#### **Emergency Overview:**

**Appearance:** White to light yellow crystals

**Odor:** None

**EU Symbols:** Xn - HARMFUL O - OXIDIZER

**R PHRASES:** R 8: Contact with combustible material may cause fire. R 22: Harmful if swallowed. R 36/37/38: Irritating to eyes, respiratory system and skin. R 42/43: May cause sensitization by inhalation and skin contact.

#### **Protective Equipment:**

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

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

**Skin Contact (EC):** May cause irritation May cause allergic reaction

**Skin Absorption (EC):** None Reported

**Target Organs (SA E):** None Reported  
**Ingestion (EC):** Harmful  
**Target Organs (Ing E):** None Reported  
**Inhalation:** Causes: irritation of nose and throat May cause: allergic respiratory reaction  
**Target Organs (Inh E):** None Reported  
**Medical Conditions Aggravated:** Pre-existing: Allergies or sensitivity to potassium persulfate.  
**Chronic Effects:** Chronic overexposure may cause allergic skin reactions allergic respiratory reactions  
**Cancer / Reproductive Toxicity Information:**  
IARC Listed: No

**Additional Cancer / Reproductive Toxicity Information:** None reported  
**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. Call physician if irritation develops.  
**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.  
**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

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#### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Strong oxidizer. Contact with combustible materials may cause a fire. During a fire, this product decomposes to form toxic gases.  
**Hazardous Combustion Products:** Toxic fumes of: sulfur oxides.  
**Fire / Explosion Hazards:** May react violently with: strong reducers combustible materials  
**Static Discharge:** None reported.  
**Mechanical Impact:** None reported  
**Extinguishing Media:** Water.  
**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.

---

#### 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:** Stop spilled material from being released to the environment. Cover spilled solid material with sand or other inert material.  
**Clean-up Technique:** Remove all combustible materials from the spill area. Cover with an inert material, such as sand. Sweep up material. Incinerate material at an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.  
**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: a pound or more of loose powder is spilled. If conditions warrant, increase the size of the evacuation.

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#### 7. HANDLING AND STORAGE

**Handling:** Avoid contact with eyes skin Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.  
**Storage:** Keep away from: reducers oxidizable materials Protect from: moisture heat  
**Special Packaging Instructions:** Not applicable  
**Use of the substance/preparation:** Laboratory Reagent

---

#### 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Use a fume hood to avoid exposure to dust, mist or vapor.  
**Personal Protective Equipment:**  
**Eye Protection:** safety glasses with top and side shields

**Skin / Hand Protection:** lab coat disposable latex gloves  
**Inhalation Protection:** laboratory fume hood  
**Precautionary Measures:** Avoid contact with: eyes skin Do not breathe: dust Wash thoroughly after handling. Keep away from: oxidizable materials reducers  
**TLV:** 5 mg/m<sup>3</sup>  
**PEL:** Not established  
**EU Occupational Exposure Limits:** 3 mg/m<sup>3</sup>, Inhalable dust

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White to light yellow crystals  
**Physical State:** Solid  
**Odor:** None  
**pH:** of 5% solution = 4,1  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** Decomposes at >100°C or 212°F  
**Flash Point:** Not applicable  
**Method:** Not applicable  
**Autoignition Temperature:** Not determined  
**Flammability Limits:**  
**Lower Explosion Limits:** Not applicable  
**Upper Explosion Limits:** Not applicable  
**Specific Gravity (water = 1):** 2,477  
**Evaporation Rate (water = 1):** Not applicable  
**Volatile Organic Compounds Content:** 0,0%  
**Partition Coefficient (n-octanol / water):** Not determined  
**Solubility:**  
**Water:** Soluble  
**Acid:** Not determined  
**Other:** Not determined  
**Metal Corrosivity:**  
**Steel:** 0,704 in/yr  
**Aluminum:** 0,137 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Excess moisture Exposure to air. Heating to decomposition.  
**Reactivity / Incompatibility:** May react violently in contact with: oxidizable material reducers  
**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
**LD50:** Oral Rat LD50 = 802 mg/kg  
**LC50:** None reported  
**Dermal Toxicity Data:** None reported  
**Skin and Eye Irritation Data:** Testing showed only slight erythema to rabbit skin.  
**Mutation Data:** None reported  
**Reproductive Effects Data:** None reported  
--  
**Ingredient Toxicological Data:** --  
Not applicable  
IARC Listed: No

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

Not applicable

---

### 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.

---

### 14. TRANSPORT INFORMATION

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

**I.C.A.O. Proper Shipping Name:** Potassium Persulphate

--

**ICAO Hazard Class:** 5,1

**ICAO Subsidiary Risk:** NA

**ICAO UN/ID Number:** UN1492

**ICAO Packing Group:** III

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Potassium Persulphate

--

**I.M.O. Hazard Class:** 5,1

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

**I.M.O. UN Number:** UN1492

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

**A.D.R.:**

**A.D.R. Proper Shipping Name:** Potassium Persulphate

--

**A.D.R Hazard Class:** 5,1

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

**A.D.R. UN-Number::** 1492

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

**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

---

### 15. REGULATORY INFORMATION

**National Inventories:**

**EEC Inventory Status:** EINECS Listed: Yes

**EEC Number:** 2317818

**EEC LABEL COPY:**

**EU Symbols:** Xn - HARMFUL O - OXIDIZER

**R PHRASES:** R 8: Contact with combustible material may cause fire. R 22: Harmful if swallowed. R 36/37/38: Irritating to eyes, respiratory system and skin. R 42/43: May cause sensitization by inhalation and skin contact.

**S PHRASES:** S 22: Do not breathe dust. S 24: Avoid contact with skin. S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S 37: Wear suitable gloves.

---

### 16. OTHER INFORMATION

**References:** TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Technical Judgment. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 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. In-house information. 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. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. CCINFO MSDS/FTSS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor).

**R PHRASES:** R 8: Contact with combustible material may cause fire. R 22: Harmful if swallowed. R 36/37/38: Irritating to eyes, respiratory system and skin. R 42/43: May cause sensitization by inhalation and skin contact.

**Use of the substance/preparation:** Laboratory Reagent

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

---

**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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(970) 669-3050

MSDS No: M00489

## SAFETY DATA SHEET

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

**Product Name:** Buffer Solution, pH 2,0  
**Catalog Number:** 45233

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:** M00489  
**Chemical Name:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Use of the substance/preparation:** Buffer  
**CAS No.:** Not applicable  
**Hazard:** Causes eye burns.  
**Date of MSDS Preparation:**  
**Day:** 12  
**Month:** 01  
**Year:** 2006

**Additional Emergency Response Numbers:** Austria: +49 (0)6131 19240, Belgium: +32-(0)70-245245, France: +33 (0)1-40370404, Italy: +39-026610102 9, Netherlands: +31-(0)30-2748888, Switzerland: +41-(0)1-2515151

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Demineralized Water

**EEC Number:** 2317912  
**CAS No.:** 7732185  
**Percent Range:** 65,0 - 75,0  
**Percent Range Units:** volume / volume  
**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

#### Sodium Bisulfate

**EEC Number:** 2316657  
**CAS No.:** 10034-88-5  
**Percent Range:** 10,0 - 20,0  
**Percent Range Units:** weight / volume  
**Ingredient EEC Symbol:** Xi - IRRITATING  
**Ingredient R phrase(s) (R phrase details given in Heading 16):** R 41  
**TLV:** Not established  
**PEL:** Not established  
**EU Occupational Exposure Limits:** 3 mg/m<sup>3</sup>, Inhalable dust

#### Sodium Sulfate

**EEC Number:** 2318209  
**CAS No.:** 7757825  
**Percent Range:** 10,0 - 20,0

**Percent Range Units:** weight / volume  
**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:** 3 mg/m<sup>3</sup>, Inhalable dust

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, colorless liquid  
**Odor:** None  
**EU Symbols:** Xi - IRRITATING  
**R PHRASES:** R 41: Risk of serious damage to eyes.

**Protective Equipment:**

**Potential Health Effects:**

**Eye Contact (EC):** Causes severe irritation  
**Skin Contact (EC):** May cause irritation  
**Skin Absorption (EC):** None Reported  
**Target Organs (SA E):** None Reported  
**Ingestion (EC):** May cause: gastrointestinal tract irritation  
**Target Organs (Ing E):** None Reported  
**Inhalation:** No effects anticipated  
**Target Organs (Inh E):** Not applicable  
**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions  
**Chronic Effects:** None reported  
**Cancer / Reproductive Toxicity Information:**  
This product does NOT contain any IARC listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Tests performed on this product / components gave insufficient evidence to classify for carcinogenicity.

**Toxicologically Synergistic Products:** None reported

---

### 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 if irritation develops.  
**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.  
**Inhalation:** None required.

---

### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.  
**Hazardous Combustion Products:** This material will not burn.  
**Fire / Explosion Hazards:** None reported  
**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.

---

### 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:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

---

## 7. HANDLING AND STORAGE

**Handling:** Avoid contact with eyes skin clothing Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use.

**Special Packaging Instructions:** Not applicable

**Use of the substance/preparation:** Buffer

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

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

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Wash thoroughly after handling. Protect from: freezing

**TLV:** Not established

**PEL:** Not established

**EU Occupational Exposure Limits:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Odor:** None

**pH:** 2,0 @ 20°C

**Vapor Pressure:** Not determined

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

**Boiling Point:** 100°C (212°F)

**Melting Point:** Not determined

**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):** 1,198

**Evaporation Rate (water = 1):** 0,54

**Volatile Organic Compounds Content:** Not applicable

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

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** 0,124 in/yr

**Aluminum:** 0,012 in/yr

---

## 10. STABILITY / REACTIVITY

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

**Conditions to Avoid:** Evaporation Extreme temperatures

**Reactivity / Incompatibility:** May react violently in contact with: calcium hypochlorite

**Hazardous Decomposition:** Toxic fumes of: sodium oxides sulfur oxides

**Hazardous Polymerization:** Will not occur.

---

## 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

--

**Ingredient Toxicological Data:** Sodium Bisulfate: Oral rat LD<sub>50</sub> = 2828 mg/kg, Oral rat LD<sub>50</sub> = 1600 mg/kg; Sodium Sulfate: Oral mouse LD<sub>50</sub> = 5989 mg/kg

This product does NOT contain any IARC listed chemicals.

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** Sodium Sulfate: Aquatic Toxicity- TLm 13500 mg/L bluegill sunfish / 96 hours, TLm 16500 mg/L mosquito fish / 96 hours

---

## 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.

---

## 14. TRANSPORT INFORMATION

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

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO UN/ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

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

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

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

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

**A.D.R.:**

**A.D.R. Proper Shipping Name:** Not Currently Regulated

--

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

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

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

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

**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

---

## 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:** Xi - IRRITATING

**R PHRASES:** R 41: Risk of serious damage to eyes.

**S PHRASES:** S 24: Avoid contact with skin. S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

---

## 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. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. 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. In-house information.

**R PHRASES:** R 41: Risk of serious damage to eyes.

**Use of the substance/preparation:** Buffer

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

---

### 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.

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