



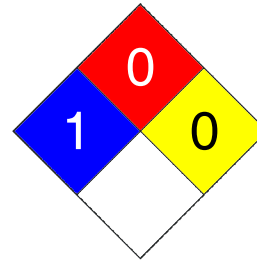
# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

**Product Name** Enzymax Liquid  
**CAS #** Mixture  
**Product Use** Cleaner  
**Manufacturer** Hu-Friedy Mfg. Co., LLC  
 3232 N. Rockwell  
 Chicago, IL 60618-5982 US  
 Phone: 773.975.6100  
 Fax: 773.868.3599  
 Emergency Phone: 1-800-535-5053  
 Outside US: 001-352-323-3500

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	* 1
Flammability	0
Physical Hazard	0
Personal Protection	X



## 2. Hazards Identification

### Emergency Overview

**WARNING**  
 MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION.  
 MAY CAUSE ALLERGIC RESPIRATORY REACTION.  
 Contains a potential reproductive toxin.

### Potential short term health effects

#### Routes of exposure

Eye, Skin contact, Inhalation, Ingestion.

#### Eyes

May cause irritation.

#### Skin

May cause irritation.

#### Inhalation

May cause respiratory tract irritation.

#### Ingestion

May cause stomach distress, nausea or vomiting.

### Target organs

Eyes. Respiratory system. Skin.

### Chronic effects

Prolonged or repeated exposure can cause drying, defatting and dermatitis.

### Signs and symptoms

Symptoms may include redness, oedema, drying, defatting and cracking of the skin.  
 Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

### Potential environmental effects

See section 12.

## 3. Composition/Information on Ingredients

Ingredient(s)	CAS #	Percent
Potassium hydroxide	1310-58-3	0.1 - 1
A-Amylase (EC# 3.2.1.1)	9000-90-2	0.1 - 1
Subtilisin protease enzyme	9014-01-1	1 - 5
Sodium borate	1330-43-4	1 - 5
Beta.-Alanine, N-(2-carboxyethyl)-N-(2-ethylhexyl)-, monosodium salt	94441-92-6	1 - 5
Disodium capryloamphodipropionate	68815-55-4	5 - 10
1,2-Propylene glycol	57-55-6	5 - 10

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## 4. First Aid Measures

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### First aid procedures

<b>Eye contact</b>	Flush with cool water. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.
<b>Skin contact</b>	Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.
<b>Inhalation</b>	If symptoms develop move victim to fresh air. If symptoms persist, obtain medical attention.
<b>Ingestion</b>	Do not induce vomiting. Never give anything by mouth if victim is unconscious, or is convulsing. Obtain medical attention.

### Notes to physician

Symptoms may be delayed.

### General advice

If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

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## 5. Fire-fighting Measures

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<b>Flammable properties</b>	Not flammable by WHMIS criteria.
<b>Extinguishing media</b>	
<b>Suitable extinguishing media</b>	Treat for surrounding material.
<b>Unsuitable extinguishing media</b>	Not available
<b>Protection of firefighters</b>	
<b>Specific hazards arising from the chemical</b>	Not available
<b>Protective equipment for firefighters</b>	Firefighters should wear full protective clothing including self contained breathing apparatus.
<b>Hazardous combustion products</b>	May include and are not limited to: Oxides of carbon. Oxides of nitrogen.
<b>Explosion data</b>	
<b>Sensitivity to mechanical impact</b>	Not available
<b>Sensitivity to static discharge</b>	Not available

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## 6. Accidental Release Measures

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<b>Personal precautions</b>	Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
<b>Environmental precautions</b>	Do not discharge into lakes, streams, ponds or public waters.
<b>Methods for containment</b>	Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.
<b>Methods for cleaning up</b>	Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice. Never return spills in original containers for re-use.

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## 7. Handling and Storage

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<b>Handling</b>	Use good industrial hygiene practices in handling this material. Avoid breathing vapours or mists of this product. Use only with adequate ventilation. Avoid contact with eyes and skin. Wash thoroughly after handling.
<b>Storage</b>	Keep out of reach of children. Store in a closed container away from incompatible materials.

## 8. Exposure Controls / Personal Protection

### Exposure limit values

Ingredient(s)	Exposure limit values
1,2-Propylene glycol	<b>ACGIH-TLV</b> Not established
A-Amylase (EC# 3.2.1.1)	<b>ACGIH-TLV</b> Not established
Beta.-Alanine, N-(2-carboxyethyl)-N-(2-ethylhexyl)-, monosodium salt	<b>ACGIH-TLV</b> Not established
Disodium capryloamphodipropionate	<b>ACGIH-TLV</b> Not established
Potassium hydroxide	<b>ACGIH-TLV</b> Ceiling: 2 mg/m3
Sodium borate	<b>ACGIH-TLV</b> TWA: 2 mg/m3 STEL: 6 mg/m3
Subtilisin protease enzyme	<b>ACGIH-TLV</b> Ceiling: 0.0001 mg/m3

### Engineering controls

General ventilation normally adequate.

### Personal protective equipment

#### Eye/Face protection

Wear safety glasses with side shields.

#### Hand protection

Rubber gloves. Confirm with a reputable supplier first.

#### Skin and body protection

As required by employer code.

#### Respiratory protection

Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.

#### General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands before breaks and immediately after handling the product.

## 9. Physical and Chemical Properties

Appearance	Liquid
Colour	purple
Form	Liquid
Odour	Citrus / Spearmint
Odour threshold	Not available
Physical state	Liquid
pH	7.5 - 9
Freezing point	Not available
Boiling point	104.444 °C (219.99 °F)
Pour point	Not available
Evaporation Rate	Not available
Flash point	> 93.3 °C (> 199.94 °F)
Auto-ignition temperature	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability Limits in Air, Upper, % by Volume	Not available
Vapour pressure	Not available
Vapour density	Not available
Specific gravity	1.106 - 1.118

Octanol/water coefficient	Not available
Solubility (H2O)	Not available
VOC (Weight %)	Not available
Viscosity	Not available
Percent volatile	Not available

## 10. Stability and Reactivity

<b>Reactivity</b>	None known.
<b>Possibility of hazardous reactions</b>	Hazardous polymerisation does not occur.
<b>Chemical stability</b>	Stable under recommended storage conditions.
<b>Conditions to avoid</b>	Do not mix with other chemicals.
<b>Incompatible materials</b>	Acids. Oxidizers.
<b>Hazardous decomposition products</b>	May include and are not limited to: Oxides of carbon. Oxides of nitrogen.

## 11. Toxicological Information

### Component analysis - LC50

Ingredient(s)	LC50
1,2-Propylene glycol	Not available
A-Amylase (EC# 3.2.1.1)	Not available
Beta.-Alanine, N-(2-carboxyethyl)-N-(2-ethylhexyl)-, monosodium salt	Not available
Disodium capryloamphodipropionate	Not available
Potassium hydroxide	Not available
Sodium borate	Not available
Subtilisin protease enzyme	Not available

### Component analysis - Oral LD50

Ingredient(s)	LD50
1,2-Propylene glycol	14800 mg/kg rabbit; 20000 mg/kg rat
A-Amylase (EC# 3.2.1.1)	7500 mg/kg rat
Beta.-Alanine, N-(2-carboxyethyl)-N-(2-ethylhexyl)-, monosodium salt	Not available
Disodium capryloamphodipropionate	> 5000 mg/kg mouse
Potassium hydroxide	214 mg/kg rat
Sodium borate	1060 mg/kg mouse; 2403 mg/kg rat
Subtilisin protease enzyme	2000 mg/kg rat

### Effects of acute exposure

<b>Eye</b>	May cause irritation.
<b>Skin</b>	May cause irritation.
<b>Inhalation</b>	May cause respiratory tract irritation.
<b>Ingestion</b>	May cause stomach distress, nausea or vomiting.
<b>Sensitisation</b>	May cause sensitisation by inhalation.
<b>Chronic effects</b>	Non-hazardous by WHMIS criteria.
<b>Carcinogenicity</b>	Non-hazardous by WHMIS criteria.
<b>ACGIH - Threshold Limit Values - Carcinogens</b>	
Sodium borate	1330-43-4 A4 - Not Classifiable as a Human Carcinogen (listed under Borate compounds, inorganic)
<b>Mutagenicity</b>	Non-hazardous by WHMIS criteria.
<b>Reproductive effects</b>	Contains a potential reproductive toxin.
<b>Teratogenicity</b>	Non-hazardous by WHMIS criteria.

## 12. Ecological Information

**Ecotoxicity** Components of this product have been identified as having potential environmental concerns.

**Ecotoxicity - Freshwater Algae - Acute Toxicity Data**

Sodium borate	1330-43-4	96 Hr EC50 <i>Desmodesmus subspicatus</i> : 158 mg/L; 96 Hr EC50 <i>Pseudokirchneriella subcapitata</i> : 2.6 - 21.8 mg/L [static]
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**Ecotoxicity - Freshwater Fish - Acute Toxicity Data**

Potassium hydroxide	1310-58-3	96 Hr LC50 <i>Gambusia affinis</i> : 80 mg/L [static]
Sodium borate	1330-43-4	96 Hr LC50 <i>Limanda limanda</i> : 340 mg/L

**Ecotoxicity - Water Flea - Acute Toxicity Data**

Sodium borate	1330-43-4	48 Hr LC50 <i>Daphnia magna</i> : 1085 - 1402 mg/L
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**Persistence and degradability** Not available

**Bioaccumulation/accumulation** Not available

**Mobility in environmental media** Not available

**Environmental effects** Not available

**Aquatic toxicity** Not available

**Partition coefficient** Not available

**Chemical fate information** Not available

**Other adverse effects** Not available

## 13. Disposal Considerations

**Disposal instructions** Review federal, provincial, and local government requirements prior to disposal.

**Waste from residues / unused products** Not available

**Contaminated packaging** Not available

## 14. Transport Information

**Transportation of Dangerous Goods (TDG - Canada)**

Not regulated as dangerous goods.

## 15. Regulatory Information

**Canadian federal regulations** This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

**Canada - WHMIS - Ingredient Disclosure List**

Potassium hydroxide	1310-58-3	1 %
Sodium borate	1330-43-4	1 %

**WHMIS classification** Class D - Division 2A, 2B

**WHMIS status** Controlled

**WHMIS labeling**



**Inventory Status**

Country(s) or region	Inventory Name	On Inventory (Yes/No)*
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

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## 16. Other Information

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<b>Disclaimer</b>	Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.
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<b>Other Information</b>	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.