



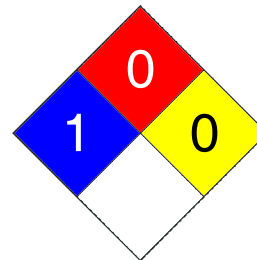
MATERIAL SAFETY DATA SHEET

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

4. First Aid Measures

First aid procedures

Eye contact	Flush with cool water. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.
Skin contact	Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.
Inhalation	If symptoms develop move victim to fresh air. If symptoms persist, obtain medical attention.
Ingestion	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.

5. Fire-fighting Measures

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

6. Accidental Release Measures

Personal precautions	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.
Environmental precautions	Do not discharge into lakes, streams, ponds or public waters.
Methods for containment	Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	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.

7. Handling and Storage

Handling	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.
Storage	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	ACGIH-TLV Not established
A-Amylase (EC# 3.2.1.1)	ACGIH-TLV Not established
Beta.-Alanine, N-(2-carboxyethyl)-N-(2-ethylhexyl)-, monosodium salt	ACGIH-TLV Not established
Disodium capryloamphodipropionate	ACGIH-TLV Not established
Potassium hydroxide	ACGIH-TLV Ceiling: 2 mg/m3
Sodium borate	ACGIH-TLV TWA: 2 mg/m3 STEL: 6 mg/m3
Subtilisin protease enzyme	ACGIH-TLV 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

Reactivity	None known.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Do not mix with other chemicals.
Incompatible materials	Acids. Oxidizers.
Hazardous decomposition products	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

Eye	May cause irritation.
Skin	May cause irritation.
Inhalation	May cause respiratory tract irritation.
Ingestion	May cause stomach distress, nausea or vomiting.
Sensitisation	May cause sensitisation by inhalation.
Chronic effects	Non-hazardous by WHMIS criteria.
Carcinogenicity	Non-hazardous by WHMIS criteria.

ACGIH - Threshold Limit Values - Carcinogens

Sodium borate	1330-43-4	A4 - Not Classifiable as a Human Carcinogen (listed under Borate compounds, inorganic)
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Mutagenicity	Non-hazardous by WHMIS criteria.
Reproductive effects	Contains a potential reproductive toxin.
Teratogenicity	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)

16. Other Information

Disclaimer

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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Other Information

For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.