

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : BIOREM® CD20
Product code : LIQ0014

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

REALZYME
S Pioneer BLVD, 223
Springboro, - OH 45066
United States of America
T +1 937 350 56 60 - F +1 937 350 56 60
info@realzyme.com - www.realzyme.com

1.4. Emergency telephone number

Emergency number : +1- 800 - 222 - 1222 (United States only) 011-32-70-245-245 (Canada and all other areas)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Serious eye damage/eye irritation, Category 2	H319	Causes serious eye irritation.
Respiratory sensitisation, Category 1	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Full text of H-statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labelling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger

Hazard statements (GHS US) : H319 - Causes serious eye irritation.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary statements (GHS US) : P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P284 - [In case of inadequate ventilation] wear respiratory protection.
P304+P341 - If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P342+P311 - If experiencing respiratory symptoms: Call a poison center or doctor.
P501 - Dispose of contents/container to hazardous or special waste collection point

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2.3. Other hazards which do not result in classification

Other hazards which do not result in classification : None under normal conditions.

2.4. Unknown acute toxicity (GHS US)

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS-US classification
	CAS-No.: 7732-18-5	50 – 80	Not classified
subtilisin	CAS-No.: 9014-01-1	1 - 5	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 Resp. Sens. 1, H334 STOT SE 3, H335 Aquatic Acute 1, H400 Aquatic Chronic 2, H411
amylase, α-	CAS-No.: 9000-90-2	0.436 – 0.872	Resp. Sens. 1, H334
laccase	CAS-No.: 80498-15-3	1 - 5	Resp. Sens. 1, H334
4-formylphenylboronic acid	CAS-No.: 87199-17-5	0.1 – 1	Skin Sens. 1, H317

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: If on skin, take off contaminated clothing. Wash clothing before re-using. If you feel unwell, seek medical advice (show the label where possible). Call a poison center or a doctor if you feel unwell.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Remove victim to fresh air. Allow the victim to rest. If experiencing respiratory symptoms: Call a poison center or a doctor.
First-aid measures after skin contact	: Wash skin with mild soap and water. Wash skin with plenty of water.
First-aid measures after eye contact	: Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Rinse mouth. Call a poison center or a doctor if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation	: Cough. May cause sensitization by inhalation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Symptoms/effects after skin contact	: Redness. Repeated or prolonged skin contact may cause irritation.
Symptoms/effects after eye contact	: Redness, pain.
Symptoms/effects after ingestion	: Abdominal pain, nausea.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

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SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : All extinguishing media allowed. Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media : None.

5.2. Specific hazards arising from the chemical

Fire hazard : Not combustible.
Explosion hazard : Product is not explosive.
Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Precautionary measures fire : Wear proper protective equipment.
Firefighting instructions : Exercise caution when fighting any chemical fire.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Ensure adequate ventilation. Collect spillage.

6.1.1. For non-emergency personnel

Protective equipment : Personal protection. See Section 8.
Emergency procedures : Ventilate spillage area. Evacuate area. Avoid breathing dust/fume/gas/mist/vapours/spray.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. Personal protection. See Section 8. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures : Mark the danger area. Evacuate unnecessary personnel. Stop leak if safe to do so.

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

For containment : Dike for recovery or absorb with appropriate material.
Methods for cleaning up : Take up liquid spill into absorbent material. Clean up any spills as soon as possible, using an absorbent material to collect it. Dilute residue with water. Rinse with plenty of water.
Other information : Use suitable disposal containers. Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

See Section 8. For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product. Avoid breathing dust/fume/gas/mist/vapours/spray.

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Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Provide for a tub to collect spills.
Storage conditions : Keep container closed when not in use. Store in a well-ventilated place. Keep cool.
Incompatible products : None to our knowledge.
Incompatible materials : None to our knowledge.
Storage temperature : 4 – 25 °C
Heat and ignition sources : Store away from direct sunlight or other heat sources.
Packaging materials : PEHD.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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No additional information available

(7732-18-5)

No additional information available

subtilisin (9014-01-1)

USA - NIOSH - Occupational Exposure Limits

NIOSH REL STEL	0.00006 mg/m ³ 60 minutes average value
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laccase (80498-15-3)

No additional information available

4-formylphenylboronic acid (87199-17-5)

No additional information available

amylase, α- (9000-90-2)

No additional information available

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure adequate ventilation. Ensure good ventilation of the work station.
Environmental exposure controls : Prevent entry to sewers and public waters. Avoid release to the environment. Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Gloves. Safety glasses.

Hand protection:

In case of repeated or prolonged contact wear gloves. (EN 374)

Eye protection:

Chemical goggles or safety glasses. Eye protection (standard EN 166). Safety glasses

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Skin and body protection:

Use chemically protective clothing

Respiratory protection:

Approved dust or mist respirator (acc. to EN 140 or EN 136) should be used if airborne particles are generated when handling this material. Recommended Filter: type P3 (acc. to EN 143). The entrepreneur has to ensure that maintenance cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. [In case of inadequate ventilation] wear respiratory protection.

Personal protective equipment symbol(s):



Thermal hazard protection:

Not applicable.

Other information:

Provide local exhaust or general room ventilation to minimize exposure to dust. The equipment must be cleaned thoroughly after each use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: brown
Odour	: characteristic
Odour threshold	: Not determined
pH	: 6.2 – 9.2
Melting point	: The product has not been tested
Freezing point	: The product has not been tested
Boiling point	: The product has not been tested
Flash point	: The product has not been tested
Relative evaporation rate (butylacetate=1)	: The product has not been tested
Flammability (solid, gas)	: Not applicable Not applicable.
Vapour pressure	: The product has not been tested
Relative vapour density at 20°C	: The product has not been tested
Relative density	: 1.102 – 1.202
Solubility	: Material highly soluble in water.
Partition coefficient n-octanol/water (Log Pow)	: The product has not been tested
Auto-ignition temperature	: Not applicable
Decomposition temperature	: Not applicable
Viscosity, kinematic	: The product has not been tested
Viscosity, dynamic	: The product has not been tested
Explosive limits	: No data available
Explosive properties	: Product is not explosive.
Oxidising properties	: Not applicable.

9.2. Other information

Additional information : None

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SECTION 10: Stability and reactivity

10.1. Reactivity

Stable in use and storage conditions as recommended in item 7.

10.2. Chemical stability

Stable in use and storage conditions as recommended in item 7.

10.3. Possibility of hazardous reactions

Stable in use and storage conditions as recommended in item 7.

10.4. Conditions to avoid

None to our knowledge.

10.5. Incompatible materials

None to our knowledge.

10.6. Hazardous decomposition products

Carbon oxides (CO, CO₂). Thermal decomposition generates :

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

subtilisin (9014-01-1)

LD50 oral	1800 mg/kg bodyweight
ATE US (oral)	500 mg/kg bodyweight

laccase (80498-15-3)

LD50 oral	> 2000 mg/kg
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amylase, α - (9000-90-2)

LD50 oral	> 2000 mg/kg (OECD TG 401,420)
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Skin corrosion/irritation : Not classified
pH: 6.2 – 9.2
Serious eye damage/irritation : Causes serious eye irritation.
pH: 6.2 – 9.2
Respiratory or skin sensitisation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
STOT-single exposure : Not classified

subtilisin (9014-01-1)

STOT-single exposure	May cause respiratory irritation.
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STOT-repeated exposure : Not classified
Aspiration hazard : Not classified
Viscosity, kinematic : The product has not been tested

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Symptoms/effects after inhalation	: Cough. May cause sensitization by inhalation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Symptoms/effects after skin contact	: Redness. Repeated or prolonged skin contact may cause irritation.
Symptoms/effects after eye contact	: Redness, pain.
Symptoms/effects after ingestion	: Abdominal pain, nausea.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

subtilisin (9014-01-1)	
LC50 - Fish [1]	8.2 mg/l (OECD 203 method)
EC50 - Crustacea [1]	586 µg/l (Daphnie sp.)
ErC50 algae	0.83 mg/l (OECD 201 method)
laccase (80498-15-3)	
EC50, daphnia	31,7 - 457 (48 Hours)
ErC50, algae	> 5,2 mg/l (72 Hours)
LC50, fish	58,3 - 326,7 mg/l (96 Hours)
amylase, α- (9000-90-2)	
LC50 - Fish [1]	58.3 – 326.7 mg/l
EC50 - Crustacea [1]	31.7 – 457 mg/l
EC50 72h - Algae [1]	≥ 5.2 mg/l (OCDE 201)
ErC50 algae	≥ 5.2 mg/l
EC50, daphnia	31,7 - 457 mg/l (48 Hours, (OCDE 202))
ErC50, algae	≥ 5,2 mg/l (72 Hours, (OCDE 201))
LC50, fish	58,3 - 326,7 mg/l (96 Hours, (OCDE 203))

12.2. Persistence and degradability

BIOREM® CD20	
Biodegradation	> 99 % (OECD 302B method)
subtilisin (9014-01-1)	
Persistence and degradability	(OECD 301B method). Biodegradable.
laccase (80498-15-3)	
Persistence and degradability	Biodegradable.
amylase, α- (9000-90-2)	
Persistence and degradability	Biodegradable. (OECD 301F method).
Biodegradation	(OECD 301F method)

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12.3. Bioaccumulative potential

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Partition coefficient n-octanol/water (Log Pow)	The product has not been tested
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subtilisin (9014-01-1)

Partition coefficient n-octanol/water (Log Pow)	< 0
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Bioaccumulative potential	not bioaccumulable.
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laccase (80498-15-3)

Partition coefficient n-octanol/water (Log Pow)	< 0
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Bioaccumulative potential	not bioaccumulable.
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amylase, α- (9000-90-2)

Partition coefficient n-octanol/water (Log Pow)	< 0
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Bioaccumulative potential	not bioaccumulable.
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12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Regional legislation (waste)	: Disposal must be done according to official regulations.
Waste treatment methods	: Remove to an authorized waste treatment plant. Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations	: May be discharged to wastewater treatment installation.
Product/Packaging disposal recommendations	: Dispose of contents/container to hazardous or special waste collection point. When totally empty, containers are recyclable like any other packing.
Ecology - waste materials	: Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (DOT)	: Not applicable
Proper Shipping Name (TDG)	: Not applicable
Proper Shipping Name (IMDG)	: Not applicable
Proper Shipping Name (IATA)	: Not applicable

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT)	: Not applicable
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TDG

Transport hazard class(es) (TDG) : Not applicable

IMDG

Transport hazard class(es) (IMDG) : Not applicable

IATA

Transport hazard class(es) (IATA) : Not applicable

14.4. Packing group

Packing group (DOT) : Not applicable

Packing group (TDG) : Not applicable

Packing group (IMDG) : Not applicable

Packing group (IATA) : Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

DOT

No data available

TDG

No data available

IMDG

No data available

IATA

No data available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

National regulations

No additional information available

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15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 7/6/2022

Full text of H-statements	
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H400	Very toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

NFPA health hazard

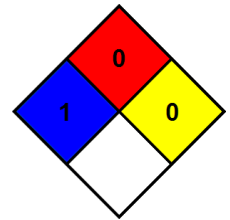
: 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA fire hazard

: 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity

: 0 - Material that in themselves are normally stable, even under fire conditions.



Safety Data Sheet (SDS), USA

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.