



# SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of: Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008

Revision Date 14-Mar-2024

Revision Number 2.1

**07465 07466 - Papain**

## Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

**Document Number** DX21364  
**Product Name** Papain  
**EC No.** 232-627-2  
**Synonym** Papainase; Papaya peptidase I  
**Pure substance/mixture** Substance

Contains 2-(3-aminopropanoylamino)-3-(1H-imidazol-5-yl)propanoic acid

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Laboratory reagent  
**Uses advised against** No information available

### 1.3. Details of the supplier of the safety data sheet

#### Manufacturer

STEMCELL Technologies SARL  
 40 Rue des Berges, Miniparc Polytec, Bâtiment Sirocco, 38000 Grenoble, France  
 +33 (0) 4 76 04 75 30  
 STEMCELL Technologies Germany GmbH  
 Stolberger Str. 200, 50933, Köln, Germany  
 +33 (0) 4 76 04 75 30  
 STEMCELL Technologies UK Ltd.  
 Building 7100, Cambridge Research Park, Beach Drive, Waterbeach, Cambridge, UK, CB25 9TL  
 +33 (0) 4 76 04 75 30

For further information, please contact

### 1.4. Emergency telephone number

**Emergency Telephone** No information available

<b>Emergency Telephone - \$45 - (EC)1272/2008</b>
<b>Europe</b> 112

## Section 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture



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Regulation (EC) No 1272/2008

Skin corrosion/irritation	Category 2 - (H315)
Serious eye damage/eye irritation	Category 2 - (H319)
Respiratory sensitization	Category 1 - (H334)
Specific target organ toxicity (single exposure)	Category 3 - (H335)

## 2.2. Label elements

232-627-2

Contains 2-(3-aminopropanoylamino)-3-(1H-imidazol-5-yl)propanoic acid



Signal word

Danger

## Hazard statements

### Hazard statements

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H335 - May cause respiratory irritation

## Precautionary Statements - EU (§28, 1272/2008)

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P284 - In case of inadequate ventilation wear respiratory protection

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor

## Additional information

This product requires tactile warnings if supplied to the general public

## 2.3. Other hazards

No information available

## Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Synonym

Chemical name	EC No.	CAS No.	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH Registration Number
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2-(3-aminopropanoylamino)-3-(1H-imidazol-5-yl)propanoic acid	232-627-2	9001-73-4	100	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Resp. Sens. 1 (H334) STOT SE 3 (H335)	No data available
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Full text of H- and EUH-phrases: see section 16

## Section 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance.
Inhalation	May cause allergic respiratory reaction. If breathing has stopped, give artificial respiration. Get medical attention immediately. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Get immediate medical advice/attention. Remove to fresh air.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.
Skin contact	May cause an allergic skin reaction. In the case of skin irritation or allergic reactions see a physician. Wash off immediately with soap and plenty of water for at least 15 minutes.
Ingestion	May produce an allergic reaction. Get immediate medical advice/attention. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.
Self-protection of the first aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms	May cause allergy or asthma symptoms or breathing difficulties if inhaled. Coughing and/ or wheezing. Itching. Rashes. Hives. Burning sensation.
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### 4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians	May cause sensitization in susceptible persons. Treat symptomatically.
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## Section 5: FIRE-FIGHTING MEASURES

### 5.1. Extinguishing media



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**Suitable Extinguishing Media** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media** No information available.

### 5.2. Special hazards arising from the substance or mixture

**Specific hazards arising from the chemical** Product is or contains a sensitizer. May cause sensitization by inhalation and skin contact.

### 5.3. Advice for firefighters

**Special protective equipment for fire-fighters** Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

## Section 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

**Personal precautions** Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

**Other Information** Refer to protective measures listed in Sections 7 and 8.

**For emergency responders** Use personal protection recommended in Section 8.

### 6.2. Environmental precautions

**Environmental precautions** Prevent further leakage or spillage if safe to do so.

### 6.3. Methods and material for containment and cleaning up

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Take up mechanically, placing in appropriate containers for disposal.

**Prevention of secondary hazards** Clean contaminated objects and areas thoroughly observing environmental regulations.

### 6.4. Reference to other sections

**Reference to other sections** See section 8 for more information. See section 13 for more information.

## Section 7: HANDLING AND STORAGE



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## 7.1. Precautions for safe handling

### **Advice on safe handling**

Provide extract ventilation to points where emissions occur. Remove contaminated clothing and shoes. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid breathing vapors or mists. In case of insufficient ventilation, wear suitable respiratory equipment.

### **General hygiene considerations**

Remove and wash contaminated clothing and gloves, including the inside, before re-use. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product.

## 7.2. Conditions for safe storage, including any incompatibilities

### **Storage Conditions**

Store locked up. Store in accordance with information listed on the Product Information Sheet (PIS).

## 7.3. Specific end use(s)

### **Identified Uses**

**Risk Management Methods (RMM)** The information required is contained in this Material Safety Data Sheet.

## **Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

## 8.1. Control parameters

### **Exposure Limits**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

### **Derived No Effect Level (DNEL)**

No information available.

### **Predicted No Effect Concentration (PNEC)**

No information available.

## 8.2. Exposure controls

### **Personal protective equipment**

#### **Eye/face protection**

Wear safety glasses with side shields (or goggles). If splashes are likely to occur, wear safety glasses with side-shields.



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Hand protection	Impervious gloves. Wear suitable gloves.
Skin and body protection	Long sleeved clothing. Wear suitable protective clothing.
Respiratory protection	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
General hygiene considerations	Remove and wash contaminated clothing and gloves, including the inside, before re-use. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product.
Environmental exposure controls	No information available.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

Physical state	Solid
Appearance	Powder
Color	No information available
Odor	No data available.
Odor threshold	No data available

Property	Values	Remarks • Method
pH	No data available	None known
Melting point / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash point	No data available	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability limit:	No data available	
Lower flammability limit:	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	No data available	None known
Water solubility	No data available	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	No information available	



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**Oxidizing properties** No information available

### 9.2. Other information

**Softening point** No information available  
**Molecular weight** No information available  
**Molecular formula** No information available  
**VOC Content (%)** No information available  
**Liquid Density** No information available  
**Bulk density** No information available

## Section 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

**Reactivity** No information available.

### 10.2. Chemical stability

**Stability** Stable under recommended transport or storage conditions.

### Explosion data

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

### 10.3. Possibility of hazardous reactions

**Possibility of hazardous reactions** None under normal processing.

### 10.4. Conditions to avoid

**Conditions to avoid** None known based on information supplied.

### 10.5. Incompatible materials

**Incompatible materials** Strong acids. Strong oxidizing agents.

### 10.6. Hazardous decomposition products

**Hazardous decomposition products** None known based on information supplied.

## Section 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

### Information on likely routes of exposure



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## Product Information

<b>Inhalation</b>	May cause sensitization in susceptible persons. (based on components). Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.
<b>Eye contact</b>	Irritating to eyes. Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components).
<b>Skin contact</b>	Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Causes skin irritation. (based on components). Specific test data for the substance or mixture is not available.
<b>Ingestion</b>	May cause additional affects as listed under "Inhalation". Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

## Symptoms related to the physical, chemical and toxicological characteristics

<b>Symptoms</b>	Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Coughing and/ or wheezing. Redness. May cause redness and tearing of the eyes.
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## Numerical measures of toxicity

### Acute toxicity

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 4,004.00 mg/kg

**Unknown acute toxicity** 100 % of the mixture consists of ingredient(s) of unknown toxicity.

0 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.

100 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity.

100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas).

100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).

100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist).

## Product Information

### Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
2-(3-aminopropanoylamino)-3-(1H-imidazol-5-yl)propanoic acid	> 4 g/kg ( Rat )		

## Delayed and immediate effects as well as chronic effects from short and long-term exposure





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<b>Skin corrosion/irritation</b>	Classification based on data available for ingredients. Irritating to skin.
Product Information	
<b>Serious eye damage/eye irritation</b>	Classification based on data available for ingredients. Irritating to eyes.
Product Information	
<b>Respiratory or skin sensitization</b>	May cause sensitization by inhalation.
Product Information	
<b>Germ cell mutagenicity</b>	No information available.
Product Information	
<b>Carcinogenicity</b>	No information available.
Product Information	
<b>Reproductive toxicity</b>	No information available.
Product Information	
<b>STOT - single exposure</b>	May cause respiratory irritation.
Product Information	
<b>STOT - repeated exposure</b>	No information available.
Product Information	
<b>Aspiration hazard</b>	No information available.

## Section 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

<b>Ecotoxicity</b>	The environmental impact of this product has not been fully investigated.
<b>Unknown aquatic toxicity</b>	Contains 0 % of components with unknown hazards to the aquatic environment.
Product Information	

### 12.2. Persistence and degradability

<b>Persistence and degradability</b>	No information available.
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### 12.3. Bioaccumulative potential

<b>Bioaccumulation</b>	No information available.
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### 12.4. Mobility in soil



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**Mobility in soil** No information available.

## 12.5. Results of PBT and vPvB assessment

**PBT and vPvB assessment** No information available.

## 12.6. Other adverse effects

**Other adverse effects** No information available.

## Section 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

**Waste from residues/unused products** Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

**Contaminated packaging** Do not reuse empty containers.

## Section 14: TRANSPORT INFORMATION

### IMDG

14.1 UN Number	Not regulated
14.2 UN proper shipping name	Not regulated
14.3 Transport hazard class(es)	Not regulated
14.4 Packing Group	Not regulated
14.5 Marine pollutant	Not applicable
14.6 Special Provisions	None
14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code	No information available

### RID

14.1 UN Number	Not regulated
14.2 UN proper shipping name	Not regulated
14.3 Transport hazard class(es)	Not regulated
14.4 Packing Group	Not regulated
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	None

### ADR

14.1 UN Number	Not regulated
14.2 UN proper shipping name	Not regulated



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14.3 Transport hazard class(es) Not regulated  
14.4 Packing Group Not regulated  
14.5 Environmental hazard Not applicable  
14.6 Special Provisions None

**IATA** **Not regulated**  
14.1 UN Number Not regulated  
14.2 UN proper shipping name Not regulated  
14.3 Transport hazard class(es) Not regulated  
14.4 Packing Group Not regulated  
14.5 Environmental hazard Not applicable  
14.6 Special Provisions None

## Section 15: REGULATORY INFORMATION

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### National regulations

##### France

##### Occupational Illnesses (R-463-3, France)

Chemical name	French RG number	Title
2-(3-aminopropanoylamino)-3-(1H-imidazol-5-yl)propanoic acid 9001-73-4	RG 63	-

#### European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

#### Authorizations and/or restrictions on use:

This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorization per REACH Annex XIV
2-(3-aminopropanoylamino)-3-(1H-imidazol-5-yl)propanoic acid - 9001-73-4	Use restricted. See entry 75.	

#### Persistent Organic Pollutants

Not applicable

Ozone-depleting substances (ODS) regulation (EC) 1005/2009 Not applicable



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## International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

## Legend:

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List  
**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances  
**ENCS** - Japan Existing and New Chemical Substances  
**IECSC** - China Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**AICS** - Australian Inventory of Chemical Substances

## 15.2. Chemical safety assessment

**Chemical Safety Report** No information available

## Section 16: OTHER INFORMATION

### Key or legend to abbreviations and acronyms used in the safety data sheet

#### **Full text of H-Statements referred to under section 3**

H315 - Causes skin irritation  
H319 - Causes serious eye irritation  
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H335 - May cause respiratory irritation

#### **Legend**

SVHC: Substances of Very High Concern for Authorization:

#### **Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

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**This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006**

#### **Disclaimer**



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