

SAFETY DATA SHEET



SureGuide Cas9 Nuclease and Buffer - 100 Reactions, Part Number 5190-7717

Section 1. Identification

1.1 Product identifier

Product name : SureGuide Cas9 Nuclease and Buffer - 100 Reactions, Part Number 5190-7717
Part no. (chemical kit) : 5190-7717
Part no. : Nase Free Water 740000-42
 10X Cas9 Digestion Buffer 5190-7540
 Cas9 Nuclease 5190-7541
Validation date : 2/29/2024

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

Identified uses : Analytical reagent.
Nase Free Water 2 x 1.5 ml
 10X Cas9 Digestion Buffer 0.2 ml
 Cas9 Nuclease 0.1 ml (100 reactions)

1.3 Details of the supplier of the safety data sheet

Supplier/Manufacturer : Agilent Technologies, Inc.
 5301 Stevens Creek Blvd
 Santa Clara, CA 95051, USA
 800-227-9770

1.4 Emergency telephone number

In case of emergency : CHEMTREC®: 1-800-424-9300

Section 2. Hazards identification

2.1 Classification of the substance or mixture

OSHA/HCS status : Nase Free Water While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
 10X Cas9 Digestion Buffer While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.
 Cas9 Nuclease This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

Cas9 Nuclease
 H320 EYE IRRITATION - Category 2B
 H317 SKIN SENSITIZATION - Category 1
 H361 TOXIC TO REPRODUCTION - Category 2
 10X Cas9 Digestion Buffer Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 3%

2.2 GHS label elements

Section 2. Hazards identification

Hazard pictograms	: Cas9 Nuclease	
Signal word	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No signal word. No signal word. Warning
Hazard statements	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No known significant effects or critical hazards. No known significant effects or critical hazards. H317 - May cause an allergic skin reaction. H320 - Causes eye irritation. H361 - Suspected of damaging fertility or the unborn child.
<u>Precautionary statements</u>		
Prevention	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not applicable. Not applicable. P201 - Obtain special instructions before use. P280 - Wear protective gloves, protective clothing and eye or face protection. P261 - Avoid breathing vapor.
Response	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not applicable. Not applicable. P308 + P313 - IF exposed or concerned: Get medical advice or attention. P363 - Wash contaminated clothing before reuse. P302 + P352 - IF ON SKIN: Wash with plenty of water. P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention. 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 or attention.
Storage	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not applicable. Not applicable. Not applicable.
Disposal	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not applicable. Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Supplemental label elements	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	None known. None known. None known.
<u>2.3 Other hazards</u>		
Hazards not otherwise classified	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	None known. None known. None known.

Section 3. Composition/information on ingredients

Substance/mixture	: <input checked="" type="checkbox"/> RNase Free Water	Substance
	10X Cas9 Digestion Buffer	Mixture
	Cas9 Nuclease	Mixture

Ingredient name	%	CAS number
<input checked="" type="checkbox"/> RNase Free Water		
water	100	7732-18-5
Cas9 Nuclease		
Glycerol	≥50 - ≤75	56-81-5
Potassium chloride	≤5	7447-40-7
2-Mercaptoethanol	≤0.3	60-24-2
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	<0.1	9036-19-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

4.1 Description of necessary first aid measures

Eye contact	: <input checked="" type="checkbox"/> RNase Free Water	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	10X Cas9 Digestion Buffer	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	Cas9 Nuclease	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
Inhalation	: <input checked="" type="checkbox"/> RNase Free Water	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	10X Cas9 Digestion Buffer	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	Cas9 Nuclease	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give

Section 4. First aid measures

Skin contact

: RNase Free Water

10X Cas9 Digestion Buffer

Cas9 Nuclease

mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion

: RNase Free Water

10X Cas9 Digestion Buffer

Cas9 Nuclease

Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact

: RNase Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

No known significant effects or critical hazards. No known significant effects or critical hazards. Causes eye irritation.

Inhalation

: RNase Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Skin contact

: RNase Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

No known significant effects or critical hazards. No known significant effects or critical hazards. May cause an allergic skin reaction.

Section 4. First aid measures

Ingestion : Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

No known significant effects or critical hazards.
 No known significant effects or critical hazards.
 No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

No specific data.
 No specific data.
 Adverse symptoms may include the following:
 irritation
 watering
 redness

Inhalation : Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

No specific data.
 No specific data.
 Adverse symptoms may include the following:
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

Skin contact : Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

No specific data.
 No specific data.
 Adverse symptoms may include the following:
 irritation
 redness
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

Ingestion : Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

No specific data.
 No specific data.
 Adverse symptoms may include the following:
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
 In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
 Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

No specific treatment.
 No specific treatment.
 No specific treatment.

Protection of first-aiders : Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

No action shall be taken involving any personal risk or without suitable training.
 No action shall be taken involving any personal risk or without suitable training.
 No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

: Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

Use an extinguishing agent suitable for the surrounding fire.
 Use an extinguishing agent suitable for the surrounding fire.
 Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media

: Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

None known.
 None known.
 None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical

: Nase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

In a fire or if heated, a pressure increase will occur and the container may burst.
 In a fire or if heated, a pressure increase will occur and the container may burst.
 In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products

: Nase Free Water
 10X Cas9 Digestion Buffer

 Cas9 Nuclease

No specific data.
 Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 nitrogen oxides
 halogenated compounds
 metal oxide/oxides
 Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 halogenated compounds
 metal oxide/oxides

5.3 Advice for firefighters

Special protective actions for fire-fighters

: Nase Free Water

 10X Cas9 Digestion Buffer

 Cas9 Nuclease

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
 Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
 Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters

: Nase Free Water

 10X Cas9 Digestion Buffer

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
 Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 5. Fire-fighting measures

Cas9 Nuclease

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: Nase Free Water

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

10X Cas9 Digestion Buffer

Cas9 Nuclease

For emergency responders

: Nase Free Water

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

10X Cas9 Digestion Buffer

Cas9 Nuclease

6.2 Environmental precautions

: Nase Free Water

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

10X Cas9 Digestion Buffer

Cas9 Nuclease

6.3 Methods and materials for containment and cleaning up

Section 6. Accidental release measures

Methods for cleaning up	: RNase Free Water	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
	10X Cas9 Digestion Buffer	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
	Cas9 Nuclease	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

7.1 Precautions for safe handling

Protective measures	: RNase Free Water	Put on appropriate personal protective equipment (see Section 8).
	10X Cas9 Digestion Buffer	Put on appropriate personal protective equipment (see Section 8).
	Cas9 Nuclease	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
Advice on general occupational hygiene	: RNase Free Water	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	10X Cas9 Digestion Buffer	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
	Cas9 Nuclease	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face

Section 7. Handling and storage

7.2 Conditions for safe storage, including any incompatibilities

: RNase Free Water

10X Cas9 Digestion Buffer

Cas9 Nuclease

before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

Recommendations

: RNase Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

Industrial applications, Professional applications.
Industrial applications, Professional applications.
Industrial applications, Professional applications.

Industrial sector specific solutions

: RNase Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

Not available.
Not available.
Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
<p>RNase Free Water water</p> <p>Cas9 Nuclease Glycerol</p> <p>Potassium chloride 2-Mercaptoethanol</p> <p>Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-</p>	<p>None.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p> <p>CAL OSHA PEL (United States, 5/2018). TWA: 5 mg/m³ 8 hours. Form: respirable fraction TWA: 10 mg/m³ 8 hours. Form: total dust</p> <p>None.</p> <p>OARS WEEL (United States, 4/2022). Absorbed through skin. TWA: 0.2 ppm 8 hours.</p> <p>None.</p>

Biological exposure indices

No exposure indices known.

8.2 Exposure controls

Appropriate engineering controls

: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

- Physical state** : Nase Free Water Liquid.
10X Cas9 Digestion Buffer Liquid.
Cas9 Nuclease Liquid.
- Color** : Nase Free Water Colorless.
10X Cas9 Digestion Buffer Not available.
Cas9 Nuclease Not available.
- Odor** : Nase Free Water Odorless.
10X Cas9 Digestion Buffer Not available.
Cas9 Nuclease Not available.
- Odor threshold** : Nase Free Water Not available.
10X Cas9 Digestion Buffer Not available.
Cas9 Nuclease Not available.
- pH** : Nase Free Water 7
10X Cas9 Digestion Buffer 7
Cas9 Nuclease 7
- Melting point/freezing point** : Nase Free Water 0°C (32°F)
10X Cas9 Digestion Buffer Not available.
Cas9 Nuclease Not available.
- Boiling point, initial boiling point, and boiling range** : Nase Free Water 100°C (212°F)
10X Cas9 Digestion Buffer Not available.
Cas9 Nuclease Not available.

Flash point

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
<input checked="" type="checkbox"/> Cas9 Nuclease						
Glycerol	-	-	-	177	350.6	-

- Evaporation rate** : Nase Free Water Not available.
10X Cas9 Digestion Buffer Not available.
Cas9 Nuclease Not available.
- Flammability** : Nase Free Water Not applicable.
10X Cas9 Digestion Buffer Not applicable.
Cas9 Nuclease Not applicable.
- Lower and upper explosion limit/flammability limit** : Nase Free Water Not available.
10X Cas9 Digestion Buffer Not available.
Cas9 Nuclease Not available.
- Vapor pressure** : Nase Free Water 2.3 kPa (17.5 mm Hg) [room temperature]
12.3 kPa (92.258 mm Hg) [50°C (122°F)]

Section 9. Physical and chemical properties and safety characteristics

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
10X Cas9 Digestion Buffer						
water	17.5	2.3	-	92.258	12.3	-
Cas9 Nuclease						
water	17.5	2.3	-	92.258	12.3	-
Glycerol	0.000075	0.00001	-	0.0025	0.00033	-

Relative vapor density : Nase Free Water 0.62 [Air = 1]
 10X Cas9 Digestion Buffer Not available.
 Cas9 Nuclease Not available.

Relative density : Nase Free Water 1
 10X Cas9 Digestion Buffer Not available.
 Cas9 Nuclease Not available.

Media	Result
<input checked="" type="checkbox"/> Nase Free Water	
water	Soluble
10X Cas9 Digestion Buffer	
water	Soluble
Cas9 Nuclease	
water	Soluble

Partition coefficient: n-octanol/water : Nase Free Water -1.38
 10X Cas9 Digestion Buffer Not applicable.
 Cas9 Nuclease Not applicable.

Ingredient name	°C	°F	Method
<input checked="" type="checkbox"/> Cas9 Nuclease			
Glycerol	370	698	-

Decomposition temperature : Nase Free Water Not available.
 10X Cas9 Digestion Buffer Not available.
 Cas9 Nuclease Not available.

Viscosity : Nase Free Water Not available.
 10X Cas9 Digestion Buffer Not available.
 Cas9 Nuclease Not available.

Particle characteristics

Median particle size : Nase Free Water Not applicable.
 10X Cas9 Digestion Buffer Not applicable.
 Cas9 Nuclease Not applicable.

Section 10. Stability and reactivity

10.1 Reactivity : Nase Free Water No specific test data related to reactivity available for this product or its ingredients.
 10X Cas9 Digestion Buffer No specific test data related to reactivity available for this product or its ingredients.
 Cas9 Nuclease No specific test data related to reactivity available for this product or its ingredients.

Section 10. Stability and reactivity

10.2 Chemical stability	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	The product is stable. The product is stable. The product is stable.
10.3 Possibility of hazardous reactions	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. No specific data. No specific data.
10.5 Incompatible materials	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.
10.6 Hazardous decomposition products	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<input checked="" type="checkbox"/> Cas9 Nuclease				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
2-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-
Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	LD50 Oral	Rat	2800 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<input checked="" type="checkbox"/> Cas9 Nuclease					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
2-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 mg	-
Poly(oxy-1,2-ethanediyl), .	Eyes - Severe irritant	Rabbit	-	1 %	-

Section 11. Toxicological information

alpha-[(1,1,3,3-tetramethylbutyl)phenyl]-omega.-hydroxy-

Sensitization

Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
<input checked="" type="checkbox"/> Cas9 Nuclease 2-Mercaptoethanol	Category 2	-	heart, liver

Aspiration hazard

Not available.

Information on the likely routes of exposure : Nose Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

Not available.
Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.
Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Eye contact : Nose Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

No known significant effects or critical hazards.
No known significant effects or critical hazards.
Causes eye irritation.

Inhalation : Nose Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Skin contact : Nose Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

No known significant effects or critical hazards.
No known significant effects or critical hazards.
May cause an allergic skin reaction.

Ingestion : Nose Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Nose Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease

No specific data.
No specific data.
Adverse symptoms may include the following:
irritation
watering
redness

Section 11. Toxicological information

Inhalation	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. No specific data. Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Skin contact	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. No specific data. Adverse symptoms may include the following: irritation redness reduced fetal weight increase in fetal deaths skeletal malformations
Ingestion	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. No specific data. Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Nase Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease
No known significant effects or critical hazards.
No known significant effects or critical hazards.
Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : Nase Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease
No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Mutagenicity : Nase Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease
No known significant effects or critical hazards.
No known significant effects or critical hazards.
No known significant effects or critical hazards.

Reproductive toxicity : Nase Free Water
10X Cas9 Digestion Buffer
Cas9 Nuclease
No known significant effects or critical hazards.
No known significant effects or critical hazards.
Suspected of damaging fertility or the unborn child.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
10X Cas9 Digestion Buffer 10X Cas9 Digestion Buffer	150000.0	N/A	N/A	N/A	N/A
Cas9 Nuclease					
Cas9 Nuclease	73446.3	N/A	N/A	N/A	N/A
Glycerol	12600	N/A	N/A	N/A	N/A
Potassium chloride	2600	N/A	N/A	N/A	N/A
2-Mercaptoethanol	244	200	N/A	3	N/A
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	500	N/A	N/A	N/A	N/A

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Cas9 Nuclease			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours
Potassium chloride	Acute EC50 9.24 g/L Fresh water	Algae - <i>Desmodesmus subspicatus</i>	72 hours
	Acute EC50 1337000 µg/l Fresh water	Algae - <i>Navicula seminulum</i>	96 hours
	Acute LC50 9.68 mg/l Fresh water	Crustaceans - <i>Pseudosida ramosa</i> - Neonate	48 hours
	Acute LC50 93000 µg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 509.65 mg/l Fresh water	Fish - <i>Danio rerio</i>	96 hours
2-Mercaptoethanol	Acute EC50 0.4 mg/l Fresh water	Daphnia	48 hours
Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-.omega.-hydroxy-	Acute EC50 210 µg/l Fresh water	Algae - <i>Selenastrum sp.</i>	96 hours
	Acute LC50 10800 µg/l Marine water	Crustaceans - <i>Pandalus montagui</i> - Adult	48 hours
	Acute LC50 2.518 mg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 7200 µg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
Cas9 Nuclease				
Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
2-Mercaptoethanol	OECD 310 Ready Biodegradability - CO ₂ in Sealed Vessels (Headspace Test)	69 % - Not readily - 60 days	20 mg/l	-

Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
RNase Free Water water	-	-	Readily
Cas9 Nuclease Potassium chloride 2-Mercaptoethanol	- - -	- - -	Readily Not readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
RNase Free Water water	-1.38	-	Low
Cas9 Nuclease Glycerol	-1.76	-	Low
Potassium chloride	-0.46	-	Low
2-Mercaptoethanol	-0.056	-	Low
Poly(oxy-1,2-ethanediyl), . alpha.-[(1,1,3,3-tetramethylbutyl) phenyl]-.omega.-hydroxy-	2.7	78.67	Low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

12.5 Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

13.1 Waste treatment methods

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

DOT / TDG / Mexico / IMDG / IATA : Not regulated.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

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

U.S. Federal regulations : **TSCA 8(a) PAIR:** Poly(oxy-1,2-ethanediyl), .alpha.-[(1,1,3,3-tetramethylbutyl)phenyl]-omega.-hydroxy-
TSCA 8(a) CDR Exempt/Partial exemption: Not determined

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : **N**ase Free Water
 10X Cas9 Digestion Buffer
 Cas9 Nuclease

Not applicable.
 Not applicable.
 EYE IRRITATION - Category 2B
 SKIN SENSITIZATION - Category 1
 TOXIC TO REPRODUCTION - Category 2

Composition/information on ingredients

Name	%	Classification
<input checked="" type="checkbox"/> Cas9 Nuclease		
Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B
Potassium chloride	≤5	EYE IRRITATION - Category 2B
2-Mercaptoethanol	≤0.3	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (dermal) - Category 2 ACUTE TOXICITY (inhalation) - Category 3 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1A TOXIC TO REPRODUCTION - Category 2 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

State regulations

Section 15. Regulatory information

- Massachusetts** : The following components are listed: GLYCERINE MIST
- New York** : None of the components are listed.
- New Jersey** : The following components are listed: GLYCERIN
- Pennsylvania** : The following components are listed: 1,2,3-PROPANETRIOL
- California Prop. 65**

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

- Australia** : Not determined.
- Canada** : All components are listed or exempted.
- China** : Not determined.
- Japan** : **Japan inventory (CSCL)**: Not determined.
Japan inventory (ISHL): Not determined.
- New Zealand** : Not determined.
- Philippines** : Not determined.
- Republic of Korea** : Not determined.
- Taiwan** : All components are listed or exempted.
- Thailand** : Not determined.
- Turkey** : Not determined.
- United States** : All components are active or exempted.
- Viet Nam** : Not determined.

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
Cas9 Nuclease EYE IRRITATION - Category 2B SKIN SENSITIZATION - Category 1 TOXIC TO REPRODUCTION - Category 2	Calculation method Calculation method Calculation method

History

- Date of issue/Date of revision** : 02/29/2024
- Date of previous issue** : 02/26/2021
- Version** : 6

Section 16. Other information

Key to abbreviations

- : ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- N/A = Not available
- UN = United Nations

✔ Indicates information that has changed from previously issued version.

Notice to reader

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