

SAFETY DATA SHEET

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

Section 1. Identification

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

Part No. (Chemical Kit) : 5190-7717

Part No. : RNase Free Water 740000-42
 10X Cas9 Digestion Buffer 5190-7540
 Cas9 Nuclease 5190-7541

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

Analytical reagent.

10X Cas9 Digestion Buffer 0.2 mL
 Cas9 Nuclease 0.1 mL (100 reactions)
 RNase Free Water 1.5 mL

Supplier/Manufacturer : Agilent Technologies Australia Pty Ltd
 679 Springvale Road
 Mulgrave
 Victoria 3170, Australia
 1800 802 402

Emergency telephone number (with hours of operation) : CHEMTREC®: (61)-290372994

Section 2. Hazard(s) identification

Classification of the substance or mixture

10X Cas9 Digestion Buffer

H315 SKIN CORROSION/IRRITATION - Category 2
 H319 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A

GHS label elements

Hazard pictograms :



Signal word : RNase Free Water No signal word.
 10X Cas9 Digestion Buffer WARNING
 Cas9 Nuclease No signal word.

Hazard statements : RNase Free Water No known significant effects or critical hazards.
 10X Cas9 Digestion Buffer H319 - Causes serious eye irritation.
 H315 - Causes skin irritation.
 Cas9 Nuclease No known significant effects or critical hazards.

Precautionary statements

Prevention : RNase Free Water Not applicable.
 10X Cas9 Digestion Buffer P280 - Wear protective gloves. Wear eye or face protection.
 P264 - Wash hands thoroughly after handling.
 Cas9 Nuclease Not applicable.

Section 2. Hazard(s) identification

Response	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not applicable. P302 + P352 + P362 + P363 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. P332 + P313 - If skin irritation occurs: Get medical 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 attention.
Storage	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not applicable. Not applicable. Not applicable.
Disposal	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not applicable. Not applicable. Not applicable.
Supplemental label elements	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not applicable. Not applicable. Not applicable.
Other hazards which do not result in classification	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	None known. None known. None known.

Section 3. Composition and ingredient information

Substance/mixture	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Substance Mixture Mixture
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CAS number/other identifiers

Ingredient name	% (w/w)	CAS number
RNase Free Water Water	100	7732-18-5
10X Cas9 Digestion Buffer 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	≥10 - <20	1185-53-1
Cas9 Nuclease Glycerol	≥30 - ≤60	56-81-5

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

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

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: 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. Continue to rinse for at least 10 minutes. Get medical attention.
	Cas9 Nuclease	Immediately flush eyes with plenty of water,

Section 4. First aid measures

		occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
Inhalation	: 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. 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 mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. 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. 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. Get medical attention if symptoms occur.
Skin contact	: RNase Free Water	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10X Cas9 Digestion Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	Cas9 Nuclease	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	: RNase Free Water	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
	10X Cas9 Digestion Buffer	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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 if adverse health effects persist or are severe. 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.
	Cas9 Nuclease	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless

Section 4. First aid measures

directed to do so by medical personnel. Get medical attention if symptoms occur.

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. Causes serious eye irritation. No known significant effects or critical hazards.
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. Causes skin irritation. No known significant effects or critical hazards.
Ingestion	: 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.

Over-exposure signs/symptoms

Eye contact	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. Adverse symptoms may include the following: pain or irritation watering redness No specific data.
Inhalation	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. No specific data. No specific data.
Skin contact	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. Adverse symptoms may include the following: irritation redness No specific data.
Ingestion	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. No specific data. No specific data.

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







Notes to physician	: RNase 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	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific treatment. No specific treatment. No specific treatment.
Protection of first-aiders	: RNase 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. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. No action shall be taken involving any personal risk or without suitable training.

Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media	:  Nase Free Water	Use an extinguishing agent suitable for the surrounding fire.
	10X Cas9 Digestion Buffer	Use an extinguishing agent suitable for the surrounding fire.
	Cas9 Nuclease	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	:  Nase Free Water	None known.
	10X Cas9 Digestion Buffer	None known.
	Cas9 Nuclease	None known.
Specific hazards arising from the chemical	:  Nase Free Water	In a fire or if heated, a pressure increase will occur and the container may burst.
	10X Cas9 Digestion Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
	Cas9 Nuclease	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	:  Nase Free Water	No specific data.
	10X Cas9 Digestion Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds metal oxide/oxides
	Cas9 Nuclease	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
Special protective actions for fire-fighters	:  Nase Free Water	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.
	10X Cas9 Digestion Buffer	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.
	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.
Special protective equipment for fire-fighters	:  Nase Free Water	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	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.
	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 5. Firefighting measures

Hazchem code	:	☒Nase Free Water	Not available.
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.

Section 6. Accidental release measures

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 spilt material. Put on appropriate personal protective equipment.
		10X Cas9 Digestion Buffer	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 spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
		Cas9 Nuclease	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 spilt material. Put on appropriate personal protective equipment.
For emergency responders	:	☒Nase Free Water	If specialised 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	If specialised 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".
		Cas9 Nuclease	If specialised 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".
Environmental precautions	:	☒Nase Free Water	Avoid dispersal of spilt 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	Avoid dispersal of spilt 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).
		Cas9 Nuclease	Avoid dispersal of spilt 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).

Methods and material 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

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). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. 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.
	Cas9 Nuclease	Put on appropriate personal protective equipment (see Section 8).
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 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.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : RNase Free Water

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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

10X Cas9 Digestion Buffer

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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

Cas9 Nuclease

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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Cas9 Nuclease Glycerol	Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours.

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: safety glasses with side-shields.

Skin protection

Section 8. Exposure controls and personal 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.
- 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

Appearance

Physical state	:	<input checked="" type="checkbox"/> Nase Free Water	Liquid.
		10X Cas9 Digestion Buffer	Liquid.
		Cas9 Nuclease	Liquid.
Colour	:	<input checked="" type="checkbox"/> Nase Free Water	Colourless.
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Odour	:	<input checked="" type="checkbox"/> Nase Free Water	Odourless.
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Odour threshold	:	<input checked="" type="checkbox"/> Nase Free Water	Not available.
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
pH	:	<input checked="" type="checkbox"/> Nase Free Water	7
		10X Cas9 Digestion Buffer	7
		Cas9 Nuclease	7
Melting point	:	<input checked="" type="checkbox"/> Nase Free Water	0°C (32°F)
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Boiling point	:	<input checked="" type="checkbox"/> Nase Free Water	100°C (212°F)
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Flash point	:	<input checked="" type="checkbox"/> Nase Free Water	Not applicable.
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Evaporation rate	:	<input checked="" type="checkbox"/> Nase Free Water	Not available.
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Flammability (solid, gas)	:	<input checked="" type="checkbox"/> Nase Free Water	Not applicable.
		10X Cas9 Digestion Buffer	Not applicable.
		Cas9 Nuclease	Not applicable.
Lower and upper explosive (flammable) limits	:	<input checked="" type="checkbox"/> Nase Free Water	Not available.
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Vapour pressure	:	<input checked="" type="checkbox"/> Nase Free Water	3.2 kPa (23.8 mm Hg) [room temperature]
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Vapour density	:		

Section 9. Physical and chemical properties

		☒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.
Solubility	:	☒Nase Free Water	Easily soluble in the following materials: cold water and hot water.
		10X Cas9 Digestion Buffer	Soluble in the following materials: cold water and hot water.
		Cas9 Nuclease	Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	:	☒Nase Free Water	-1.38
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Auto-ignition temperature	:	☒Nase Free Water	Not applicable.
		10X Cas9 Digestion Buffer	Not available.
		Cas9 Nuclease	Not available.
Decomposition temperature	:	☒Nase Free Water	>1200°C (>2192°F)
		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.

Section 10. Stability and reactivity

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.
Chemical stability	:	☒Nase Free Water	The product is stable.
		10X Cas9 Digestion Buffer	The product is stable.
		Cas9 Nuclease	The product is stable.
Possibility of hazardous reactions	:	☒Nase Free Water	Under normal conditions of storage and use, hazardous reactions will not occur.
		10X Cas9 Digestion Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
		Cas9 Nuclease	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	☒Nase Free Water	No specific data.
		10X Cas9 Digestion Buffer	No specific data.
		Cas9 Nuclease	No specific data.
Incompatible materials	:	☒Nase Free Water	May react or be incompatible with oxidising materials.
		10X Cas9 Digestion Buffer	May react or be incompatible with oxidising materials.
		Cas9 Nuclease	May react or be incompatible with oxidising materials.

Section 10. Stability and reactivity

Hazardous decomposition products	: RNase Free Water	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10X Cas9 Digestion Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Cas9 Nuclease	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Cas9 Nuclease Glycerol	LD50 Oral	Rat	12600 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Cas9 Nuclease Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

Sensitisation

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
10X Cas9 Digestion Buffer 2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not available. Routes of entry anticipated: Oral, Dermal, Inhalation. Routes of entry anticipated: Oral, Dermal, Inhalation.
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Potential acute health effects

Section 11. Toxicological information

Eye contact	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No known significant effects or critical hazards. Causes serious eye irritation. No known significant effects or critical hazards.
Inhalation	: <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. No known significant effects or critical hazards.
Skin contact	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No known significant effects or critical hazards. Causes skin irritation. No known significant effects or critical hazards.
Ingestion	: <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. No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer	No specific data. Adverse symptoms may include the following: pain or irritation watering redness
	Cas9 Nuclease	No specific data.
Inhalation	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. No specific data. No specific data.
Skin contact	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer	No specific data. Adverse symptoms may include the following: irritation redness
	Cas9 Nuclease	No specific data.
Ingestion	: <input checked="" type="checkbox"/> Nase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	No specific data. No specific data. No specific data.

Delayed and immediate effects as well as 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

Not available.

General	: <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. No known significant effects or critical hazards.
Carcinogenicity	: <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. No known significant effects or critical hazards.
Mutagenicity	: <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. No known significant effects or critical hazards.
Teratogenicity	: <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. No known significant effects or critical hazards.

Section 11. Toxicological information

Developmental effects	: 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.
Fertility effects	: 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.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Other information	: RNase Free Water 10X Cas9 Digestion Buffer Cas9 Nuclease	Not available. Not available. Not available.
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Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
RNase Nuclease Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
RNase Free Water Water	-	100 % - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
RNase Free Water Water	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
RNase Free Water Water	-1.38	-	low
Cas9 Nuclease Glycerol	-1.76	-	low

Mobility in soil

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

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

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimised 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 spill material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory information

ADG / IMDG / IATA : Not regulated as Dangerous Goods according to the ADG Code .

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 Annex II of Marpol and the IBC Code : Not available.

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

6

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

Australia inventory (AICS) : Not determined.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

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.

International lists

National inventory

Canada : All components are listed or exempted.
China : Not determined.
Europe : All components are listed or exempted.
Japan : **Japan inventory (ENCS):** Not determined.
Japan inventory (ISHL): Not determined.
Malaysia : Not determined.

Section 15. Regulatory information

- New Zealand** : Not determined.
- Philippines** : Not determined.
- Republic of Korea** : Not determined.
- Taiwan** : Not determined.
- Turkey** : Not determined.
- United States** : All components are listed or exempted.

Section 16. Any other relevant information

History

- Date of issue/Date of revision** : 14/10/2016
- Date of previous issue** : 30/09/2015.
- Version** : 3

Key to abbreviations

- ADG = Australian Dangerous Goods
- 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)
- NOHSC = National Occupational Health and Safety Commission
- SUSMP = Standard Uniform Schedule of Medicine and Poisons
- UN = United Nations

Procedure used to derive the classification

Classification	Justification
10X Cas9 Digestion Buffer Skin Irrit. 2, H315 Eye Irrit. 2A, H319	Calculation method Calculation method

- References** : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

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