Conforms to US OSHA Hazard Communication 29CFR1910.1200

SAFETY DATA SHEET

Agilent Technologies

Luciferase Assay Kit, Part Number 219020

Section 1. Identification

1.1 Product identifier

Product name : Luciferase Assay Kit, Part Number 219020

Part No. (Chemical Kit) : 219020

Part No. :

Luciferase Assay Substrate Lyophilized	219020-51
Luciferase Assay Buffer (1X)	219020-52
Luciferase Cell Culture Lysis Buffer (5X) Reagent	219020-53

Validation date : 5/30/2017

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

Material uses : Analytical reagent.

Luciferase Assay Substrate Lyophilized	0.5 ml
Luciferase Assay Buffer (1X)	10 ml
Luciferase Cell Culture Lysis Buffer (5X) Reagent	30 ml

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 :

Luciferase Assay Substrate Lyophilized	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.
Luciferase Assay Buffer (1X)	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.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

Luciferase Cell Culture Lysis Buffer (5X) Reagent

H318 SERIOUS EYE DAMAGE - Category 1

Section 2. Hazards identification

Ingredients of unknown toxicity	:	Luciferase Assay Substrate Lyophilized	Percentage of the mixture consisting of ingredient (s) of unknown dermal toxicity: 1 - 10% Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 1 - 10%
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Percentage of the mixture consisting of ingredient (s) of unknown dermal toxicity: 1 - 10% Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 30 - 60% Percentage of the mixture consisting of ingredient (s) of unknown oral toxicity: 1 - 10%

2.2 GHS label elements

Hazard pictograms	:	Luciferase Cell Culture Lysis Buffer (5X) Reagent	
Signal word	:	Luciferase Assay Substrate Lyophilized	No signal word.
		Luciferase Assay Buffer (1X)	No signal word.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Danger
Hazard statements	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	H318 - Causes serious eye damage.

Precautionary statements

Prevention	:	Luciferase Assay Substrate Lyophilized	Not applicable.
		Luciferase Assay Buffer (1X)	Not applicable.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	P280 - Wear eye or face protection.
Response	:	Luciferase Assay Substrate Lyophilized	Not applicable.
		Luciferase Assay Buffer (1X)	Not applicable.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
Storage	:	Luciferase Assay Substrate Lyophilized	Not applicable.
		Luciferase Assay Buffer (1X)	Not applicable.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not applicable.
Disposal	:	Luciferase Assay Substrate Lyophilized	Not applicable.
		Luciferase Assay Buffer (1X)	Not applicable.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not applicable.
Supplemental label elements	:	Luciferase Assay Substrate Lyophilized	None known.
		Luciferase Assay Buffer (1X)	None known.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	None known.

Section 2. Hazards identification

2.3 Other hazards

Hazards not otherwise classified :

Luciferase Assay Substrate Lyophilized	None known.
Luciferase Assay Buffer (1X)	None known.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	None known.

Section 3. Composition/information on ingredients

Substance/mixture :

Luciferase Assay Substrate Lyophilized	Mixture
Luciferase Assay Buffer (1X)	Mixture
Luciferase Cell Culture Lysis Buffer (5X) Reagent	Mixture

Ingredient name	%	CAS number
Luciferase Assay Substrate Lyophilized		
Acetic acid, (ethylenedinitrilo)tetra-, disodium salt, dihydrate	≤3	6381-92-6
Luciferase Cell Culture Lysis Buffer (5X) Reagent		
Glycerol	≥50 - ≤75	56-81-5
Polyoxyethylene octyl phenyl ether	≤7.1	9002-93-1
2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	≤2.8	1185-53-1

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 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

4.1 Description of necessary first aid measures

Eye contact :

Luciferase Assay Substrate Lyophilized	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.
Luciferase Assay Buffer (1X)	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.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	Get medical attention immediately. Call a poison center or physician. 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. Chemical burns must be treated promptly by a physician.

Inhalation :

Luciferase Assay Substrate Lyophilized	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.
Luciferase Assay Buffer (1X)	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical

Section 4. First aid measures

			attention if symptoms occur.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. 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.
Skin contact	:	Luciferase Assay Substrate Lyophilized	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		Luciferase Assay Buffer (1X)	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of 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. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	:	Luciferase Assay Substrate Lyophilized	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.
		Luciferase Assay Buffer (1X)	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.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Get medical attention immediately. Call a poison center or physician. 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.

Section 4. First aid measures

Chemical burns must be treated promptly by a physician. 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	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Causes serious eye damage.
Inhalation	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.
Skin contact	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.
Ingestion	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	:	Luciferase Assay Substrate Lyophilized	No specific data.
		Luciferase Assay Buffer (1X)	No specific data.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Adverse symptoms may include the following: pain watering redness
Inhalation	:	Luciferase Assay Substrate Lyophilized	No specific data.
		Luciferase Assay Buffer (1X)	No specific data.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No specific data.
Skin contact	:	Luciferase Assay Substrate Lyophilized	No specific data.
		Luciferase Assay Buffer (1X)	No specific data.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Adverse symptoms may include the following: pain or irritation redness blistering may occur

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Ingestion	:	Luciferase Assay Substrate Lyophilized	No specific data.
		Luciferase Assay Buffer (1X)	No specific data.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Adverse symptoms may include the following: stomach pains

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

Notes to physician	:	Luciferase Assay Substrate Lyophilized	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.
		Luciferase Assay Buffer (1X)	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	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.
Specific treatments	:	Luciferase Assay Substrate Lyophilized	No specific treatment.
		Luciferase Assay Buffer (1X)	No specific treatment.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No specific treatment.
Protection of first-aiders	:	Luciferase Assay Substrate Lyophilized	No action shall be taken involving any personal risk or without suitable training.
		Luciferase Assay Buffer (1X)	No action shall be taken involving any personal risk or without suitable training.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Luciferase Assay Substrate Lyophilized	Use an extinguishing agent suitable for the surrounding fire.
		Luciferase Assay Buffer (1X)	Use an extinguishing agent suitable for the surrounding fire.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	:	Luciferase Assay Substrate Lyophilized	None known.
		Luciferase Assay Buffer (1X)	None known.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	None known.

5.2 Special hazards arising from the substance or mixture

Section 5. Fire-fighting measures

Specific hazards arising from the chemical	:	Luciferase Assay Substrate Lyophilized	No specific fire or explosion hazard.
		Luciferase Assay Buffer (1X)	In a fire or if heated, a pressure increase will occur and the container may burst.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	:	Luciferase Assay Substrate Lyophilized	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides metal oxide/oxides
		Luciferase Assay Buffer (1X)	Decomposition products may include the following materials: carbon dioxide carbon monoxide
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds

5.3 Advice for firefighters

Special protective actions for fire-fighters	:	Luciferase Assay Substrate Lyophilized	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.
		Luciferase Assay Buffer (1X)	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.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	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	:	Luciferase Assay Substrate Lyophilized	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
		Luciferase Assay Buffer (1X)	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	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	:	Luciferase Assay Substrate Lyophilized	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.
		Luciferase Assay Buffer (1X)	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.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	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. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	:	Luciferase Assay Substrate Lyophilized	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".
		Luciferase Assay Buffer (1X)	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".
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	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".

6.2 Environmental precautions	:	Luciferase Assay Substrate Lyophilized	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).
		Luciferase Assay Buffer (1X)	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).
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	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).

6.3 Methods and materials for containment and cleaning up

Section 6. Accidental release measures

Methods for cleaning up	:	Luciferase Assay Substrate Lyophilized	Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
		Luciferase Assay Buffer (1X)	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.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	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	:	Luciferase Assay Substrate Lyophilized	Put on appropriate personal protective equipment (see Section 8).
		Luciferase Assay Buffer (1X)	Put on appropriate personal protective equipment (see Section 8).
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. 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	:	Luciferase Assay Substrate Lyophilized	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.
		Luciferase Assay Buffer (1X)	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.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	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

7.2 Conditions for safe storage, including any incompatibilities	:	Luciferase Assay Substrate Lyophilized	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.
		Luciferase Assay Buffer (1X)	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.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	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	:	Luciferase Assay Substrate Lyophilized	Industrial applications, Professional applications.
		Luciferase Assay Buffer (1X)	Industrial applications, Professional applications.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Industrial applications, Professional applications.
Industrial sector specific solutions	:	Luciferase Assay Substrate Lyophilized	Not applicable.
		Luciferase Assay Buffer (1X)	Not applicable.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not applicable.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
Luciferase Assay Substrate Lyophilized	
Acetic acid, (ethylenedinitrilo)tetra-, disodium salt, dihydrate	None.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	
Glycerol	**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 **OSHA PEL (United States, 6/2016).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust
Polyoxyethylene octyl phenyl ether	None.
2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	None.

8.2 Exposure controls

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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 and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

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.

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

9.1 Information on basic physical and chemical properties

Appearance

Physical state	:	Luciferase Assay Substrate Lyophilized	Solid.
		Luciferase Assay Buffer (1X)	Liquid.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Liquid.
Color	:	Luciferase Assay Substrate Lyophilized	Colorless.
		Luciferase Assay Buffer (1X)	Colorless.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Colorless.
Odor	:	Luciferase Assay Substrate Lyophilized	Characteristic.
		Luciferase Assay Buffer (1X)	Characteristic.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Characteristic.
Odor threshold	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not available.
pH	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	8
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	7.8
Melting point	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	0°C (32°F)
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not available.
Boiling point	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	100°C (212°F)
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not available.
Flash point	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Closed cup: >100°C (>212°F)
Evaporation rate	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not available.
Flammability (solid, gas)	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not applicable.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not applicable.

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Lower and upper explosive (flammable) limits	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Lower: 0.9%
Vapor pressure	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	0.01 kPa (0.075 mm Hg) [room temperature]
Vapor density	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not available.
Relative density	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	1
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not available.
Solubility	:	Luciferase Assay Substrate Lyophilized	Insoluble in the following materials: cold water and hot water.
		Luciferase Assay Buffer (1X)	Easily soluble in the following materials: cold water and hot water.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Partially soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not available.
Auto-ignition temperature	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	400°C (752°F)
Decomposition temperature	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not available.
Viscosity	:	Luciferase Assay Substrate Lyophilized	Not available.
		Luciferase Assay Buffer (1X)	Not available.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Not available.

Section 10. Stability and reactivity

10.1 Reactivity	:	Luciferase Assay Substrate Lyophilized	No specific test data related to reactivity available for this product or its ingredients.
		Luciferase Assay Buffer (1X)	No specific test data related to reactivity available for this product or its ingredients.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No specific test data related to reactivity available for this product or its ingredients.

Section 10. Stability and reactivity

10.2 Chemical stability :

Luciferase Assay Substrate Lyophilized	The product is stable.
Luciferase Assay Buffer (1X)	The product is stable.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	The product is stable.

10.3 Possibility of hazardous reactions :

Luciferase Assay Substrate Lyophilized	Under normal conditions of storage and use, hazardous reactions will not occur.
Luciferase Assay Buffer (1X)	Under normal conditions of storage and use, hazardous reactions will not occur.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid :

Luciferase Assay Substrate Lyophilized	No specific data.
Luciferase Assay Buffer (1X)	No specific data.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	No specific data.

10.5 Incompatible materials :

Luciferase Assay Substrate Lyophilized	May react or be incompatible with oxidizing materials.
Luciferase Assay Buffer (1X)	May react or be incompatible with oxidizing materials.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	May react or be incompatible with oxidizing materials.

10.6 Hazardous decomposition products :

Luciferase Assay Substrate Lyophilized	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Luciferase Assay Buffer (1X)	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	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
Luciferase Assay Substrate Lyophilized				
Acetic acid, (ethylenedinitrilo) tetra-, disodium salt, dihydrate	LD50 Oral	Rat	2214.37 mg/kg	-
Luciferase Cell Culture Lysis Buffer (5X) Reagent				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Polyoxyethylene octyl phenyl ether	LD50 Oral	Rat	1800 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Luciferase Cell Culture Lysis Buffer (5X) Reagent					
Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Polyoxyethylene octyl phenyl ether	Eyes - Moderate irritant	Rabbit	-	24 hours 10 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-

Sensitization

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
Luciferase Assay Substrate Lyophilized			
Acetic acid, (ethylenedinitrilo)tetra-, disodium salt, dihydrate	Category 3	Not applicable.	Respiratory tract irritation
Luciferase Cell Culture Lysis Buffer (5X) Reagent			
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 the likely routes of exposure :

Luciferase Assay Substrate Lyophilized	Routes of entry anticipated: Oral, Dermal, Inhalation.
Luciferase Assay Buffer (1X)	Not available.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact :

Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	Causes serious eye damage.

Section 11. Toxicological information

Inhalation	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.
Skin contact	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.
Ingestion	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	:	Luciferase Assay Substrate Lyophilized	No specific data.
		Luciferase Assay Buffer (1X)	No specific data.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Adverse symptoms may include the following: pain watering redness
Inhalation	:	Luciferase Assay Substrate Lyophilized	No specific data.
		Luciferase Assay Buffer (1X)	No specific data.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No specific data.
Skin contact	:	Luciferase Assay Substrate Lyophilized	No specific data.
		Luciferase Assay Buffer (1X)	No specific data.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Adverse symptoms may include the following: pain or irritation redness blistering may occur
Ingestion	:	Luciferase Assay Substrate Lyophilized	No specific data.
		Luciferase Assay Buffer (1X)	No specific data.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	Adverse symptoms may include the following: stomach pains

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.

Section 11. Toxicological information

Potential chronic health effects

General	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.
Carcinogenicity	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.
Mutagenicity	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.
Teratogenicity	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.
Developmental effects	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.
Fertility effects	:	Luciferase Assay Substrate Lyophilized	No known significant effects or critical hazards.
		Luciferase Assay Buffer (1X)	No known significant effects or critical hazards.
		Luciferase Cell Culture Lysis Buffer (5X) Reagent	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Luciferase Assay Substrate Lyophilized	
Oral	50000 mg/kg
Dermal	110000 mg/kg
Inhalation (vapors)	1100 mg/l
Luciferase Cell Culture Lysis Buffer (5X) Reagent	
Oral	36640.8 mg/kg

Section 12. Ecological information

12.1 Toxicity

Section 12. Ecological information

Product/ingredient name	Result	Species	Exposure
Luciferase Cell Culture Lysis Buffer (5X) Reagent			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Polyoxyethylene octyl phenyl ether	Acute LC50 5.85 mg/l Fresh water	Crustaceans - Ceriodaphnia rigaudi - Neonate	48 hours
	Acute LC50 11.2 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 4500 µg/l Fresh water	Fish - Pimephales promelas	96 hours

12.2 Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Luciferase Cell Culture Lysis Buffer (5X) Reagent			
Polyoxyethylene octyl phenyl ether	-	-	Readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Luciferase Cell Culture Lysis Buffer (5X) Reagent			
Glycerol	-1.76	-	low
Polyoxyethylene octyl phenyl ether	4.86	-	high

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.

Section 13. Disposal considerations

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 Annex II of MARPOL and the IBC Code : 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**: Polyoxyethylene octyl phenyl ether

TSCA 8(a) CDR Exempt/Partial exemption: Not determined

Clean Water Act (CWA) 311: Orthophosphoric acid

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 :

Luciferase Assay Substrate Lyophilized	Not applicable.
Luciferase Assay Buffer (1X)	Not applicable.
Luciferase Cell Culture Lysis Buffer (5X) Reagent	Immediate (acute) health hazard

Section 15. Regulatory information

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Luciferase Assay Substrate Lyophilized						
Acetic acid, (ethylenedinitrilo)tetra-, disodium salt, dihydrate	≤3	No.	No.	No.	Yes.	No.
Luciferase Cell Culture Lysis Buffer (5X) Reagent						
Glycerol	≥50 - ≤75	No.	No.	No.	Yes.	No.
Polyoxyethylene octyl phenyl ether	≤7.1	No.	No.	No.	Yes.	No.
2-Amino-2-(hydroxymethyl)propane-1, 3-diol hydrochloride	≤2.8	No.	No.	No.	Yes.	No.

State regulations

Massachusetts : The following components are listed: GLYCERINE MIST

New York : None of the components are listed.

New Jersey : The following components are listed: GLYCERIN; 1,2,3-PROPANETRIOL

Pennsylvania : The following components are listed: 1,2,3-PROPANETRIOL

California Prop. 65

Not available.

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.

Inventory list

Australia : Not determined.

Canada : Not determined.

China : Not determined.

Europe : Not determined.

Japan : **Japan inventory (ENCS)**: Not determined.
Japan inventory (ISHL): Not determined.

Malaysia : Not determined.

New Zealand : Not determined.

Philippines : Not determined.

Republic of Korea : Not determined.

Section 15. Regulatory information

Taiwan : Not determined.

Thailand : Not determined.

Turkey : Not determined.

United States : Not determined.

Viet Nam : Not determined.

Section 16. Other information

History

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Version : 4

Indicates information that has changed from previously issued version.

Notice to reader

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