

Section 2. Hazards identification

Prevention	: pFB Retroviral Vector	Not applicable.
	pFB-Luciferase Expression Control Vector	Not applicable.
Response	: pFB Retroviral Vector	Not applicable.
	pFB-Luciferase Expression Control Vector	Not applicable.
Storage	: pFB Retroviral Vector	Not applicable.
	pFB-Luciferase Expression Control Vector	Not applicable.
Disposal	: pFB Retroviral Vector	Not applicable.
	pFB-Luciferase Expression Control Vector	Not applicable.
Supplemental label elements	: pFB Retroviral Vector	None known.
	pFB-Luciferase Expression Control Vector	None known.

2.3 Other hazards

Hazards not otherwise classified	: pFB Retroviral Vector	None known.
	pFB-Luciferase Expression Control Vector	None known.

Section 3. Composition/information on ingredients

Substance/mixture	: pFB Retroviral Vector	Mixture
	pFB-Luciferase Expression Control Vector	Mixture

There are no 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	: pFB Retroviral Vector	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.
	pFB-Luciferase Expression Control Vector	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.
Inhalation	: pFB Retroviral Vector	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	pFB-Luciferase Expression Control Vector	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Skin contact	: pFB Retroviral Vector	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	pFB-Luciferase Expression Control Vector	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Section 4. First aid measures

Ingestion	: pFB Retroviral Vector	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.
	pFB-Luciferase Expression Control Vector	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.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: pFB Retroviral Vector	No known significant effects or critical hazards.
	pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards.
Inhalation	: pFB Retroviral Vector	No known significant effects or critical hazards.
	pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards.
Skin contact	: pFB Retroviral Vector	No known significant effects or critical hazards.
	pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards.
Ingestion	: pFB Retroviral Vector	No known significant effects or critical hazards.
	pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: pFB Retroviral Vector	No specific data.
	pFB-Luciferase Expression Control Vector	No specific data.
Inhalation	: pFB Retroviral Vector	No specific data.
	pFB-Luciferase Expression Control Vector	No specific data.
Skin contact	: pFB Retroviral Vector	No specific data.
	pFB-Luciferase Expression Control Vector	No specific data.
Ingestion	: pFB Retroviral Vector	No specific data.
	pFB-Luciferase Expression Control Vector	No specific data.

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

Notes to physician	: pFB Retroviral Vector	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	pFB-Luciferase Expression Control Vector	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: pFB Retroviral Vector	No specific treatment.
	pFB-Luciferase Expression Control Vector	No specific treatment.
Protection of first-aiders	: pFB Retroviral Vector	No action shall be taken involving any personal risk or without suitable training.
	pFB-Luciferase Expression Control Vector	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. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	: pFB Retroviral Vector	Use an extinguishing agent suitable for the surrounding fire.
	pFB-Luciferase Expression Control Vector	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: pFB Retroviral Vector	None known.
	pFB-Luciferase Expression Control Vector	None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	: pFB Retroviral Vector	In a fire or if heated, a pressure increase will occur and the container may burst.
	pFB-Luciferase Expression Control Vector	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	: pFB Retroviral Vector	No specific data.
	pFB-Luciferase Expression Control Vector	No specific data.

5.3 Advice for firefighters

Special protective actions for fire-fighters	: pFB Retroviral Vector	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.
	pFB-Luciferase Expression Control Vector	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	: pFB Retroviral Vector	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	pFB-Luciferase Expression Control Vector	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	: pFB Retroviral Vector	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.
	pFB-Luciferase Expression Control Vector	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.

Section 6. Accidental release measures

For emergency responders	<p>pFB Retroviral Vector</p> <p>pFB-Luciferase Expression Control Vector</p>	<p>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".</p> <p>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".</p>
6.2 Environmental precautions	<p>pFB Retroviral Vector</p> <p>pFB-Luciferase Expression Control Vector</p>	<p>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).</p> <p>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).</p>
6.3 Methods and materials for containment and cleaning up		
Methods for cleaning up	<p>pFB Retroviral Vector</p> <p>pFB-Luciferase Expression Control Vector</p>	<p>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.</p> <p>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.</p>

Section 7. Handling and storage

7.1 Precautions for safe handling

Protective measures	<p>pFB Retroviral Vector</p> <p>pFB-Luciferase Expression Control Vector</p>	<p>Put on appropriate personal protective equipment (see Section 8).</p> <p>Put on appropriate personal protective equipment (see Section 8).</p>
Advice on general occupational hygiene	<p>pFB Retroviral Vector</p> <p>pFB-Luciferase Expression Control Vector</p>	<p>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.</p> <p>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.</p>

Section 7. Handling and storage

7.2 Conditions for safe storage, including any incompatibilities

: pFB Retroviral Vector

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.

pFB-Luciferase Expression Control Vector

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.

7.3 Specific end use(s)

Recommendations

: pFB Retroviral Vector
pFB-Luciferase Expression Control Vector

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

Industrial sector specific solutions

: pFB Retroviral Vector
pFB-Luciferase Expression Control Vector

Not available.
Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
None.	

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.

Section 8. Exposure controls/personal protection

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	
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.
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	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Liquid. Liquid.
Color	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Odor	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Odor threshold	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
pH	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	7.5 7.5
Melting point	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	0°C (32°F) 0°C (32°F)
Boiling point	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	100°C (212°F) 100°C (212°F)
Flash point	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Evaporation rate	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Flammability (solid, gas)	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not applicable. Not applicable.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Vapor pressure	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Vapor density	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Relative density	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Solubility	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not applicable. Not applicable.
Auto-ignition temperature	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Decomposition temperature	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.
Viscosity	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	Not available. Not available.

Section 10. Stability and reactivity

10.1 Reactivity	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	The product is stable. The product is stable.
10.3 Possibility of hazardous reactions	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	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	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No specific data. No specific data.
10.5 Incompatible materials	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	May react or be incompatible with oxidizing materials. May react or be incompatible with oxidizing materials.

Section 10. Stability and reactivity

10.6 Hazardous decomposition products	: pFB Retroviral Vector	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	pFB-Luciferase Expression Control Vector	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

Not available.

Irritation/Corrosion

Not available.

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)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure	: pFB Retroviral Vector	Not available.
	pFB-Luciferase Expression Control Vector	Not available.

Potential acute health effects

Eye contact	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards. No known significant effects or critical hazards.
Inhalation	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards. No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No specific data. No specific data.
Inhalation	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No specific data. No specific data.
Skin contact	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No specific data. No specific data.
Ingestion	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No specific data. No specific data.

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	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards. No known significant effects or critical hazards.
Carcinogenicity	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards. No known significant effects or critical hazards.
Mutagenicity	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards. No known significant effects or critical hazards.
Reproductive toxicity	: pFB Retroviral Vector pFB-Luciferase Expression Control Vector	No known significant effects or critical hazards. No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

N/A

Section 12. Ecological information

12.1 Toxicity

Not available.

12.2 Persistence and degradability

Not available.

12.3 Bioaccumulative potential

Section 12. Ecological information

Not available.

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. 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) CDR Exempt/Partial exemption: Not determined
Clean Water Act (CWA) 311: Edetic acid

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

Section 15. Regulatory information

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	:	pFB Retroviral Vector	Not applicable.
		pFB-Luciferase Expression	Not applicable.
		Control Vector	

Composition/information on ingredients

No products were found.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

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 : All components are listed or exempted.

Canada : All components are listed or exempted.

China : All components are listed or exempted.

Europe : All components are listed or exempted.

Japan : **Japan inventory (CSCL)**: All components are listed or exempted.
Japan inventory (ISHL): All components are listed or exempted.

New Zealand : All components are listed or exempted.

Section 15. Regulatory information

Philippines	: All components are listed or exempted.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: <input checked="" type="checkbox"/> All components are active or exempted.
Viet Nam	: <input checked="" type="checkbox"/> All components are listed or exempted.

Section 16. Other information

History

Date of issue	: 08/29/2021
Date of previous issue	: 04/16/2019
Version	: 6

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

Procedure used to derive the classification

Classification	Justification
Not classified.	

☒ Indicates information that has changed from previously issued version.

Notice to reader

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