

SAFETY DATA SHEET

pESC-HIS Yeast Epitope Tagging Vector, Part Number 217451

Section 1. Identification

1.1 Product identifier

Product name	: pESC-HIS Yeast Epitope Tagging Vector, Part Number 217451
Part no. (chemical kit)	: 217451
Part no.	: pESC-HIS Vector 217451-51
	GAL 1 Forward Primer Lyophilized 217451-52
	GAL 1 Reverse Primer Lyophilized 217451-53
	GAL 10 Forward Primer Lyophilized 217451-54
	GAL 10 Reverse Primer Lyophilized 217451-55
	YPH 499 Yeast Strain 200257-41
	YPH 500 Yeast Strain 200258-41
	YPH 501 Yeast Strain 200259-41

Validation date : 11/3/2021

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

Material uses	: Analytical reagent.
	pESC-HIS Vector 0.02 ml (20 µg 1 µg/µl)
	GAL 1 Forward Primer Lyophilized 0.0025 mg
	GAL 1 Reverse Primer Lyophilized 0.0025 mg
	GAL 10 Forward Primer Lyophilized 0.0025 mg
	GAL 10 Reverse Primer Lyophilized 0.0025 mg
	YPH 499 Yeast Strain 0.5 ml
	YPH 500 Yeast Strain 0.5 ml
	YPH 501 Yeast Strain 0.5 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	: pESC-HIS Vector	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.
	GAL 1 Forward Primer 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.
	GAL 1 Reverse Primer 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.

Section 2. Hazards identification

GAL 10 Forward Primer
Lyophilized

This SDS should be retained and available for employees and other users of this product.

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.

GAL 10 Reverse Primer
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.

YPH 499 Yeast Strain

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

YPH 500 Yeast Strain

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

YPH 501 Yeast Strain

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

YPH 499 Yeast Strain

H320

EYE IRRITATION - Category 2B

YPH 500 Yeast Strain

H320

EYE IRRITATION - Category 2B

YPH 501 Yeast Strain

H320

EYE IRRITATION - Category 2B

YPH 499 Yeast Strain

Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 2%

YPH 500 Yeast Strain

Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 2%

YPH 501 Yeast Strain

Percentage of the mixture consisting of ingredient (s) of unknown hazards to the aquatic environment: 2%

2.2 GHS label elements

Signal word

: pESC-HIS Vector	No signal word.
GAL 1 Forward Primer Lyophilized	No signal word.
GAL 1 Reverse Primer Lyophilized	No signal word.
GAL 10 Forward Primer Lyophilized	No signal word.
GAL 10 Reverse Primer Lyophilized	No signal word.
YPH 499 Yeast Strain	Warning
YPH 500 Yeast Strain	Warning
YPH 501 Yeast Strain	Warning

Hazard statements

: pESC-HIS Vector	No known significant effects or critical hazards.
GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
YPH 499 Yeast Strain	H320 - Causes eye irritation.

Section 2. Hazards identification

Precautionary statements

Prevention

YPH 500 Yeast Strain	H320 - Causes eye irritation.
YPH 501 Yeast Strain	H320 - Causes eye irritation.

Response

pESC-HIS Vector	Not applicable.
GAL 1 Forward Primer Lyophilized	Not applicable.
GAL 1 Reverse Primer Lyophilized	Not applicable.
GAL 10 Forward Primer Lyophilized	Not applicable.
GAL 10 Reverse Primer Lyophilized	Not applicable.
YPH 499 Yeast Strain	Not applicable.
YPH 500 Yeast Strain	Not applicable.
YPH 501 Yeast Strain	Not applicable.
pESC-HIS Vector	Not applicable.
GAL 1 Forward Primer Lyophilized	Not applicable.
GAL 1 Reverse Primer Lyophilized	Not applicable.
GAL 10 Forward Primer Lyophilized	Not applicable.
GAL 10 Reverse Primer Lyophilized	Not applicable.
YPH 499 Yeast Strain	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
YPH 500 Yeast Strain	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
YPH 501 Yeast Strain	P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.

Storage

pESC-HIS Vector	Not applicable.
GAL 1 Forward Primer Lyophilized	Not applicable.
GAL 1 Reverse Primer Lyophilized	Not applicable.
GAL 10 Forward Primer Lyophilized	Not applicable.
GAL 10 Reverse Primer Lyophilized	Not applicable.
YPH 499 Yeast Strain	Not applicable.
YPH 500 Yeast Strain	Not applicable.
YPH 501 Yeast Strain	Not applicable.

Disposal

pESC-HIS Vector	Not applicable.
GAL 1 Forward Primer Lyophilized	Not applicable.
GAL 1 Reverse Primer Lyophilized	Not applicable.
GAL 10 Forward Primer Lyophilized	Not applicable.
GAL 10 Reverse Primer Lyophilized	Not applicable.
YPH 499 Yeast Strain	Not applicable.
YPH 500 Yeast Strain	Not applicable.
YPH 501 Yeast Strain	Not applicable.

Section 2. Hazards identification

Supplemental label elements	: pESC-HIS Vector	None known.
	GAL 1 Forward Primer Lyophilized	None known.
	GAL 1 Reverse Primer Lyophilized	None known.
	GAL 10 Forward Primer Lyophilized	None known.
	GAL 10 Reverse Primer Lyophilized	None known.
	YPH 499 Yeast Strain	None known.
	YPH 500 Yeast Strain	None known.
	YPH 501 Yeast Strain	None known.

2.3 Other hazards

Hazards not otherwise classified	: pESC-HIS Vector	None known.
	GAL 1 Forward Primer Lyophilized	None known.
	GAL 1 Reverse Primer Lyophilized	None known.
	GAL 10 Forward Primer Lyophilized	None known.
	GAL 10 Reverse Primer Lyophilized	None known.
	YPH 499 Yeast Strain	None known.
	YPH 500 Yeast Strain	None known.
	YPH 501 Yeast Strain	None known.

Section 3. Composition/information on ingredients

Substance/mixture	: pESC-HIS Vector	Mixture
	GAL 1 Forward Primer Lyophilized	Mixture
	GAL 1 Reverse Primer Lyophilized	Mixture
	GAL 10 Forward Primer Lyophilized	Mixture
	GAL 10 Reverse Primer Lyophilized	Mixture
	YPH 499 Yeast Strain	Mixture
	YPH 500 Yeast Strain	Mixture
	YPH 501 Yeast Strain	Mixture

Ingredient name	%	CAS number
YPH 499 Yeast Strain Glycerol	≥10 - ≤25	56-81-5
YPH 500 Yeast Strain Glycerol	≥10 - ≤25	56-81-5
YPH 501 Yeast Strain Glycerol	≥10 - ≤25	56-81-5

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

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

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

Section 4. First aid measures

4.1 Description of necessary first aid measures

Eye contact	: pESC-HIS 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.
	GAL 1 Forward Primer Lyophilized	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get

Section 4. First aid measures

GAL 1 Reverse Primer Lyophilized	medical attention if irritation occurs. 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.
GAL 10 Forward Primer 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.
GAL 10 Reverse Primer 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.
YPH 499 Yeast Strain	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
YPH 500 Yeast Strain	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
YPH 501 Yeast Strain	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
Inhalation : pESC-HIS Vector	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
GAL 1 Forward Primer 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.
GAL 1 Reverse Primer 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.
GAL 10 Forward Primer 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.
GAL 10 Reverse Primer 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.
YPH 499 Yeast Strain	Remove victim to fresh air and keep at rest in a

Section 4. First aid measures

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.

YPH 500 Yeast Strain

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.

YPH 501 Yeast Strain

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.

Skin contact

: pESC-HIS Vector

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

GAL 1 Forward Primer Lyophilized

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

GAL 1 Reverse Primer Lyophilized

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

GAL 10 Forward Primer
Lyophilized

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

GAL 10 Reverse Primer
Lyophilized

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

YPH 499 Yeast Strain

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

YPH 500 Yeast Strain

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion

YPH 501 Yeast Strain	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
: pESC-HIS 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.
GAL 1 Forward Primer Lyophilized	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.
GAL 1 Reverse Primer Lyophilized	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.
GAL 10 Forward Primer Lyophilized	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.
GAL 10 Reverse Primer Lyophilized	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.
YPH 499 Yeast Strain	Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention 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.
YPH 500 Yeast Strain	Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious,

Section 4. First aid measures

YPH 501 Yeast Strain

place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention 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.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact

: pESC-HIS Vector	No known significant effects or critical hazards.
GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
YPH 499 Yeast Strain	Causes eye irritation.
YPH 500 Yeast Strain	Causes eye irritation.
YPH 501 Yeast Strain	Causes eye irritation.

Inhalation

: pESC-HIS Vector	No known significant effects or critical hazards.
GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
YPH 499 Yeast Strain	No known significant effects or critical hazards.
YPH 500 Yeast Strain	No known significant effects or critical hazards.
YPH 501 Yeast Strain	No known significant effects or critical hazards.

Skin contact

: pESC-HIS Vector	No known significant effects or critical hazards.
GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
YPH 499 Yeast Strain	No known significant effects or critical hazards.
YPH 500 Yeast Strain	No known significant effects or critical hazards.
YPH 501 Yeast Strain	No known significant effects or critical hazards.

Ingestion

: pESC-HIS Vector	No known significant effects or critical hazards.
GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
YPH 499 Yeast Strain	No known significant effects or critical hazards.

Section 4. First aid measures

YPH 500 Yeast Strain	No known significant effects or critical hazards.
YPH 501 Yeast Strain	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact

: pESC-HIS Vector	No specific data.
GAL 1 Forward Primer Lyophilized	No specific data.
GAL 1 Reverse Primer Lyophilized	No specific data.
GAL 10 Forward Primer Lyophilized	No specific data.
GAL 10 Reverse Primer Lyophilized	No specific data.
YPH 499 Yeast Strain	Adverse symptoms may include the following: irritation watering redness
YPH 500 Yeast Strain	Adverse symptoms may include the following: irritation watering redness
YPH 501 Yeast Strain	Adverse symptoms may include the following: irritation watering redness

Inhalation

: pESC-HIS Vector	No specific data.
GAL 1 Forward Primer Lyophilized	No specific data.
GAL 1 Reverse Primer Lyophilized	No specific data.
GAL 10 Forward Primer Lyophilized	No specific data.
GAL 10 Reverse Primer Lyophilized	No specific data.
YPH 499 Yeast Strain	No specific data.
YPH 500 Yeast Strain	No specific data.
YPH 501 Yeast Strain	No specific data.

Skin contact

: pESC-HIS Vector	No specific data.
GAL 1 Forward Primer Lyophilized	No specific data.
GAL 1 Reverse Primer Lyophilized	No specific data.
GAL 10 Forward Primer Lyophilized	No specific data.
GAL 10 Reverse Primer Lyophilized	No specific data.
YPH 499 Yeast Strain	No specific data.
YPH 500 Yeast Strain	No specific data.
YPH 501 Yeast Strain	No specific data.

Ingestion

: pESC-HIS Vector	No specific data.
GAL 1 Forward Primer Lyophilized	No specific data.
GAL 1 Reverse Primer Lyophilized	No specific data.
GAL 10 Forward Primer Lyophilized	No specific data.
GAL 10 Reverse Primer Lyophilized	No specific data.
YPH 499 Yeast Strain	No specific data.
YPH 500 Yeast Strain	No specific data.
YPH 501 Yeast Strain	No specific data.

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

Section 4. First aid measures

Notes to physician	: pESC-HIS Vector	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	GAL 1 Forward Primer 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.
	GAL 1 Reverse Primer 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.
	GAL 10 Forward Primer 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.
	GAL 10 Reverse Primer 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.
	YPH 499 Yeast Strain	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	YPH 500 Yeast Strain	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	YPH 501 Yeast Strain	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	: pESC-HIS Vector	No specific treatment.
	GAL 1 Forward Primer Lyophilized	No specific treatment.
	GAL 1 Reverse Primer Lyophilized	No specific treatment.
	GAL 10 Forward Primer Lyophilized	No specific treatment.
	GAL 10 Reverse Primer Lyophilized	No specific treatment.
	YPH 499 Yeast Strain	No specific treatment.
Protection of first-aiders	YPH 500 Yeast Strain	No specific treatment.
	YPH 501 Yeast Strain	No specific treatment.
	: pESC-HIS Vector	No action shall be taken involving any personal risk or without suitable training.
	GAL 1 Forward Primer Lyophilized	No action shall be taken involving any personal risk or without suitable training.
	GAL 1 Reverse Primer Lyophilized	No action shall be taken involving any personal risk or without suitable training.
	GAL 10 Forward Primer Lyophilized	No action shall be taken involving any personal risk or without suitable training.
	GAL 10 Reverse Primer Lyophilized	No action shall be taken involving any personal risk or without suitable training.
	YPH 499 Yeast Strain	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.
	YPH 500 Yeast Strain	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.
	YPH 501 Yeast Strain	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.

Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media	: pESC-HIS Vector	Use an extinguishing agent suitable for the surrounding fire.
	GAL 1 Forward Primer Lyophilized	Use an extinguishing agent suitable for the surrounding fire.
	GAL 1 Reverse Primer Lyophilized	Use an extinguishing agent suitable for the surrounding fire.
	GAL 10 Forward Primer Lyophilized	Use an extinguishing agent suitable for the surrounding fire.
	GAL 10 Reverse Primer Lyophilized	Use an extinguishing agent suitable for the surrounding fire.
	YPH 499 Yeast Strain	Use an extinguishing agent suitable for the surrounding fire.
	YPH 500 Yeast Strain	Use an extinguishing agent suitable for the surrounding fire.
	YPH 501 Yeast Strain	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: pESC-HIS Vector	None known.
	GAL 1 Forward Primer Lyophilized	None known.
	GAL 1 Reverse Primer Lyophilized	None known.
	GAL 10 Forward Primer Lyophilized	None known.
	GAL 10 Reverse Primer Lyophilized	None known.
	YPH 499 Yeast Strain	None known.
	YPH 500 Yeast Strain	None known.
	YPH 501 Yeast Strain	None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	: pESC-HIS Vector	In a fire or if heated, a pressure increase will occur and the container may burst.
	GAL 1 Forward Primer Lyophilized	No specific fire or explosion hazard.
	GAL 1 Reverse Primer Lyophilized	No specific fire or explosion hazard.
	GAL 10 Forward Primer Lyophilized	No specific fire or explosion hazard.
	GAL 10 Reverse Primer Lyophilized	No specific fire or explosion hazard.
	YPH 499 Yeast Strain	In a fire or if heated, a pressure increase will occur and the container may burst.
	YPH 500 Yeast Strain	In a fire or if heated, a pressure increase will occur and the container may burst.
	YPH 501 Yeast Strain	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	: pESC-HIS Vector	No specific data.
	GAL 1 Forward Primer Lyophilized	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides
	GAL 1 Reverse Primer Lyophilized	Decomposition products may include the following materials: carbon dioxide carbon monoxide

Section 5. Fire-fighting measures

GAL 10 Forward Primer
Lyophilized

nitrogen oxides
phosphorus oxides
Decomposition products may include the following materials:

carbon dioxide
carbon monoxide
nitrogen oxides
phosphorus oxides

GAL 10 Reverse Primer
Lyophilized

Decomposition products may include the following materials:

carbon dioxide
carbon monoxide
nitrogen oxides
phosphorus oxides

YPH 499 Yeast Strain

Decomposition products may include the following materials:

carbon dioxide
carbon monoxide

YPH 500 Yeast Strain

Decomposition products may include the following materials:

carbon dioxide
carbon monoxide

YPH 501 Yeast Strain

Decomposition products may include the following materials:

carbon dioxide
carbon monoxide

5.3 Advice for firefighters

Special protective actions for fire-fighters

: pESC-HIS 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.

GAL 1 Forward Primer 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.

GAL 1 Reverse Primer 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.

GAL 10 Forward Primer
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.

GAL 10 Reverse Primer
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.

YPH 499 Yeast Strain

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.

YPH 500 Yeast Strain

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.

YPH 501 Yeast Strain

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.

Section 5. Fire-fighting measures

Special protective equipment for fire-fighters	: pESC-HIS Vector	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	GAL 1 Forward Primer Lyophilized	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	GAL 1 Reverse Primer Lyophilized	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	GAL 10 Forward Primer Lyophilized	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	GAL 10 Reverse Primer Lyophilized	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	YPH 499 Yeast Strain	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	YPH 500 Yeast Strain	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	YPH 501 Yeast Strain	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	: pESC-HIS 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.
	GAL 1 Forward Primer 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.
	GAL 1 Reverse Primer 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.
	GAL 10 Forward Primer 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.

Section 6. Accidental release measures

	GAL 10 Reverse Primer 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.
	YPH 499 Yeast Strain	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	YPH 500 Yeast Strain	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	YPH 501 Yeast Strain	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders : pESC-HIS Vector		<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> <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> <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> <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>
	GAL 1 Forward Primer Lyophilized	
	GAL 1 Reverse Primer Lyophilized	
	GAL 10 Forward Primer Lyophilized	
	GAL 10 Reverse Primer Lyophilized	
	YPH 499 Yeast Strain	
	YPH 500 Yeast Strain	

Section 6. Accidental release measures

6.2 Environmental precautions

YPH 501 Yeast Strain	the information in "For non-emergency personnel". If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
: pESC-HIS Vector	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).
GAL 1 Forward Primer 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).
GAL 1 Reverse Primer 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).
GAL 10 Forward Primer 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).
GAL 10 Reverse Primer 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).
YPH 499 Yeast Strain	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).
YPH 500 Yeast Strain	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).
YPH 501 Yeast Strain	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

Methods for cleaning up : pESC-HIS Vector

	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.
GAL 1 Forward Primer 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.
GAL 1 Reverse Primer Lyophilized	Move containers from spill area. Vacuum or sweep

Section 6. Accidental release measures

GAL 10 Forward Primer
Lyophilized

up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

GAL 10 Reverse Primer
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.

YPH 499 Yeast Strain

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.

YPH 500 Yeast Strain

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.

YPH 501 Yeast Strain

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.

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

: pESC-HIS Vector

Put on appropriate personal protective equipment (see Section 8).

GAL 1 Forward Primer Lyophilized

Put on appropriate personal protective equipment (see Section 8).

GAL 1 Reverse Primer Lyophilized

Put on appropriate personal protective equipment (see Section 8).

GAL 10 Forward Primer
Lyophilized

Put on appropriate personal protective equipment (see Section 8).

GAL 10 Reverse Primer
Lyophilized

Put on appropriate personal protective equipment (see Section 8).

YPH 499 Yeast Strain

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

YPH 500 Yeast Strain

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

YPH 501 Yeast Strain

Put on appropriate personal protective equipment

Section 7. Handling and storage

Advice on general occupational hygiene

: pESC-HIS Vector

(see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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.

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.

GAL 1 Forward Primer 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.

GAL 1 Reverse Primer 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.

GAL 10 Forward Primer
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.

GAL 10 Reverse Primer
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.

YPH 499 Yeast Strain

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.

YPH 500 Yeast Strain

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.

YPH 501 Yeast Strain

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

Section 7. Handling and storage

7.2 Conditions for safe storage, including any incompatibilities

: pESC-HIS Vector

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

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

GAL 1 Forward Primer 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.

GAL 1 Reverse Primer 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.

GAL 10 Forward Primer
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.

GAL 10 Reverse Primer
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.

YPH 499 Yeast Strain

Store in accordance with local regulations. Store in

Section 7. Handling and storage

YPH 500 Yeast Strain

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

YPH 501 Yeast Strain

7.3 Specific end use(s)

Recommendations

: pESC-HIS Vector	Industrial applications, Professional applications.
GAL 1 Forward Primer Lyophilized	Industrial applications, Professional applications.
GAL 1 Reverse Primer Lyophilized	Industrial applications, Professional applications.
GAL 10 Forward Primer Lyophilized	Industrial applications, Professional applications.
GAL 10 Reverse Primer Lyophilized	Industrial applications, Professional applications.
YPH 499 Yeast Strain	Industrial applications, Professional applications.
YPH 500 Yeast Strain	Industrial applications, Professional applications.
YPH 501 Yeast Strain	Industrial applications, Professional applications.

Industrial sector specific solutions

: pESC-HIS Vector	Not available.
GAL 1 Forward Primer Lyophilized	Not available.
GAL 1 Reverse Primer Lyophilized	Not available.
GAL 10 Forward Primer Lyophilized	Not available.
GAL 10 Reverse Primer Lyophilized	Not available.
YPH 499 Yeast Strain	Not available.
YPH 500 Yeast Strain	Not available.
YPH 501 Yeast Strain	Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
YPH 499 Yeast Strain Glycerol	OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 10 mg/m ³ 8 hours. Form: Total dust OSHA PEL (United States, 5/2018). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust
YPH 500 Yeast Strain Glycerol	OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 10 mg/m ³ 8 hours. Form: Total dust OSHA PEL (United States, 5/2018). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust
YPH 501 Yeast Strain Glycerol	OSHA PEL 1989 (United States, 3/1989). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 10 mg/m ³ 8 hours. Form: Total dust OSHA PEL (United States, 5/2018). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust

8.2 Exposure controls

Appropriate engineering controls

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

Environmental exposure controls

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

Individual protection measures

Hygiene measures

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

Eye/face protection

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

Skin protection

Section 8. Exposure controls/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.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

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

Appearance

- Physical state** :
- | | |
|-----------------------------------|---------|
| pESC-HIS Vector | Liquid. |
| GAL 1 Forward Primer Lyophilized | Solid. |
| GAL 1 Reverse Primer Lyophilized | Solid. |
| GAL 10 Forward Primer Lyophilized | Solid. |
| GAL 10 Reverse Primer Lyophilized | Solid. |
| YPH 499 Yeast Strain | Liquid. |
| YPH 500 Yeast Strain | Liquid. |
| YPH 501 Yeast Strain | Liquid. |
- Color** :
- | | |
|-----------------------------------|----------------|
| pESC-HIS Vector | Not available. |
| GAL 1 Forward Primer Lyophilized | Not available. |
| GAL 1 Reverse Primer Lyophilized | Not available. |
| GAL 10 Forward Primer Lyophilized | Not available. |
| GAL 10 Reverse Primer Lyophilized | Not available. |
| YPH 499 Yeast Strain | Not available. |
| YPH 500 Yeast Strain | Not available. |
| YPH 501 Yeast Strain | Not available. |
- Odor** :
- | | |
|-----------------------------------|----------------|
| pESC-HIS Vector | Not available. |
| GAL 1 Forward Primer Lyophilized | Not available. |
| GAL 1 Reverse Primer Lyophilized | Not available. |
| GAL 10 Forward Primer Lyophilized | Not available. |
| GAL 10 Reverse Primer Lyophilized | Not available. |
| YPH 499 Yeast Strain | Not available. |
| YPH 500 Yeast Strain | Not available. |
| YPH 501 Yeast Strain | Not available. |
- Odor threshold** :
- | | |
|-----------------------------------|----------------|
| pESC-HIS Vector | Not available. |
| GAL 1 Forward Primer Lyophilized | Not available. |
| GAL 1 Reverse Primer Lyophilized | Not available. |
| GAL 10 Forward Primer Lyophilized | Not available. |
| GAL 10 Reverse Primer Lyophilized | Not available. |
| YPH 499 Yeast Strain | Not available. |
| YPH 500 Yeast Strain | Not available. |

Section 9. Physical and chemical properties and safety characteristics

pH	:	pESC-HIS Vector	7.5
		GAL 1 Forward Primer Lyophilized	Not available.
		GAL 1 Reverse Primer Lyophilized	Not available.
		GAL 10 Forward Primer Lyophilized	Not available.
		GAL 10 Reverse Primer Lyophilized	Not available.
		YPH 499 Yeast Strain	Not available.
		YPH 500 Yeast Strain	Not available.
		YPH 501 Yeast Strain	Not available.
Melting point/freezing point	:	pESC-HIS Vector	0°C (32°F)
		GAL 1 Forward Primer Lyophilized	Not available.
		GAL 1 Reverse Primer Lyophilized	Not available.
		GAL 10 Forward Primer Lyophilized	Not available.
		GAL 10 Reverse Primer Lyophilized	Not available.
		YPH 499 Yeast Strain	Not available.
		YPH 500 Yeast Strain	Not available.
		YPH 501 Yeast Strain	Not available.
Boiling point, initial boiling point, and boiling range	:	pESC-HIS Vector	100°C (212°F)
		GAL 1 Forward Primer Lyophilized	Not available.
		GAL 1 Reverse Primer Lyophilized	Not available.
		GAL 10 Forward Primer Lyophilized	Not available.
		GAL 10 Reverse Primer Lyophilized	Not available.
		YPH 499 Yeast Strain	Not available.
		YPH 500 Yeast Strain	Not available.
		YPH 501 Yeast Strain	Not available.
Flash point	:	pESC-HIS Vector	Not available.
		GAL 1 Forward Primer Lyophilized	Not applicable.
		GAL 1 Reverse Primer Lyophilized	Not applicable.
		GAL 10 Forward Primer Lyophilized	Not applicable.
		GAL 10 Reverse Primer Lyophilized	Not applicable.
		YPH 499 Yeast Strain	Not available.
		YPH 500 Yeast Strain	Not available.
		YPH 501 Yeast Strain	Not available.

Ingredient name	Closed cup			Open cup		
	°C	°F	Method	°C	°F	Method
pESC-HIS Vector						
Edetic acid	>100	>212	DIN 51758			
YPH 499 Yeast Strain						
Glycerol			Pensky-Martens	177	350.6	
YPH 500 Yeast Strain						
Glycerol			Pensky-Martens	177	350.6	
YPH 501 Yeast Strain						
Glycerol			Pensky-Martens	177	350.6	

Section 9. Physical and chemical properties and safety characteristics

Evaporation rate	: pESC-HIS Vector	Not available.
	GAL 1 Forward Primer Lyophilized	Not available.
	GAL 1 Reverse Primer Lyophilized	Not available.
	GAL 10 Forward Primer Lyophilized	Not available.
	GAL 10 Reverse Primer Lyophilized	Not available.
	YPH 499 Yeast Strain	Not available.
	YPH 500 Yeast Strain	Not available.
	YPH 501 Yeast Strain	Not available.
Flammability	: pESC-HIS Vector	Not applicable.
	GAL 1 Forward Primer Lyophilized	Not available.
	GAL 1 Reverse Primer Lyophilized	Not available.
	GAL 10 Forward Primer Lyophilized	Not available.
	GAL 10 Reverse Primer Lyophilized	Not available.
	YPH 499 Yeast Strain	Not applicable.
	YPH 500 Yeast Strain	Not applicable.
	YPH 501 Yeast Strain	Not applicable.
Lower and upper explosion limit/flammability limit	: pESC-HIS Vector	Not available.
	GAL 1 Forward Primer Lyophilized	Not applicable.
	GAL 1 Reverse Primer Lyophilized	Not applicable.
	GAL 10 Forward Primer Lyophilized	Not applicable.
	GAL 10 Reverse Primer Lyophilized	Not applicable.
	YPH 499 Yeast Strain	Not available.
	YPH 500 Yeast Strain	Not available.
	YPH 501 Yeast Strain	Not available.
Vapor pressure	: pESC-HIS Vector	Not available.
	GAL 1 Forward Primer Lyophilized	Not available.
	GAL 1 Reverse Primer Lyophilized	Not available.
	GAL 10 Forward Primer Lyophilized	Not available.
	GAL 10 Reverse Primer Lyophilized	Not available.
	YPH 499 Yeast Strain	Not available.
	YPH 500 Yeast Strain	Not available.
	YPH 501 Yeast Strain	Not available.

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
pESC-HIS Vector						
Water	23.8	3.2				
2-Amino-2-(hydroxymethyl)propane-1,3-diol hydrochloride	0	0		0.000007501	0.000001	
YPH 499 Yeast Strain						
Water	23.8	3.2				
Glycerol	0	0		0	0	
YPH 500 Yeast Strain						
Water	23.8	3.2				

Section 9. Physical and chemical properties and safety characteristics

	Glycerol	0	0		0	0	
	YPH 501 Yeast Strain						
	Water	23.8	3.2				
	Glycerol	0	0		0	0	
Relative vapor density	<p>: pESC-HIS Vector Not available.</p> <p>GAL 1 Forward Primer Lyophilized Not applicable.</p> <p>GAL 1 Reverse Primer Lyophilized Not applicable.</p> <p>GAL 10 Forward Primer Lyophilized Not applicable.</p> <p>GAL 10 Reverse Primer Lyophilized Not applicable.</p> <p>YPH 499 Yeast Strain Not available.</p> <p>YPH 500 Yeast Strain Not available.</p> <p>YPH 501 Yeast Strain Not available.</p>						
Relative density	<p>: pESC-HIS Vector Not available.</p> <p>GAL 1 Forward Primer Lyophilized Not available.</p> <p>GAL 1 Reverse Primer Lyophilized Not available.</p> <p>GAL 10 Forward Primer Lyophilized Not available.</p> <p>GAL 10 Reverse Primer Lyophilized Not available.</p> <p>YPH 499 Yeast Strain Not available.</p> <p>YPH 500 Yeast Strain Not available.</p> <p>YPH 501 Yeast Strain Not available.</p>						
Solubility	<p>: pESC-HIS Vector Easily soluble in the following materials: cold water and hot water.</p> <p>GAL 1 Forward Primer Lyophilized Soluble in the following materials: cold water and hot water.</p> <p>GAL 1 Reverse Primer Lyophilized Soluble in the following materials: cold water and hot water.</p> <p>GAL 10 Forward Primer Lyophilized Soluble in the following materials: cold water and hot water.</p> <p>GAL 10 Reverse Primer Lyophilized Soluble in the following materials: cold water and hot water.</p> <p>YPH 499 Yeast Strain Soluble in the following materials: cold water and hot water.</p> <p>YPH 500 Yeast Strain Soluble in the following materials: cold water and hot water.</p> <p>YPH 501 Yeast Strain Soluble in the following materials: cold water and hot water.</p>						
Partition coefficient: n-octanol/water	<p>: pESC-HIS Vector Not applicable.</p> <p>GAL 1 Forward Primer Lyophilized Not applicable.</p> <p>GAL 1 Reverse Primer Lyophilized Not applicable.</p> <p>GAL 10 Forward Primer Lyophilized Not applicable.</p> <p>GAL 10 Reverse Primer Lyophilized Not applicable.</p> <p>YPH 499 Yeast Strain Not applicable.</p> <p>YPH 500 Yeast Strain Not applicable.</p> <p>YPH 501 Yeast Strain Not applicable.</p>						

Section 9. Physical and chemical properties and safety characteristics

Auto-ignition temperature :

pESC-HIS Vector	Not available.
GAL 1 Forward Primer Lyophilized	Not applicable.
GAL 1 Reverse Primer Lyophilized	Not applicable.
GAL 10 Forward Primer Lyophilized	Not applicable.
GAL 10 Reverse Primer Lyophilized	Not applicable.
YPH 499 Yeast Strain	Not available.
YPH 500 Yeast Strain	Not available.
YPH 501 Yeast Strain	Not available.

Ingredient name	°C	°F	Method
pESC-HIS Vector			
Edetic acid	>400	>752	VDI 2263
YPH 499 Yeast Strain			
Glycerol	370	698	
YPH 500 Yeast Strain			
Glycerol	370	698	
YPH 501 Yeast Strain			
Glycerol	370	698	

Decomposition temperature :

pESC-HIS Vector	Not available.
GAL 1 Forward Primer Lyophilized	Not available.
GAL 1 Reverse Primer Lyophilized	Not available.
GAL 10 Forward Primer Lyophilized	Not available.
GAL 10 Reverse Primer Lyophilized	Not available.
YPH 499 Yeast Strain	Not available.
YPH 500 Yeast Strain	Not available.
YPH 501 Yeast Strain	Not available.

Viscosity :

pESC-HIS Vector	Not available.
GAL 1 Forward Primer Lyophilized	Not applicable.
GAL 1 Reverse Primer Lyophilized	Not applicable.
GAL 10 Forward Primer Lyophilized	Not applicable.
GAL 10 Reverse Primer Lyophilized	Not applicable.
YPH 499 Yeast Strain	Not available.
YPH 500 Yeast Strain	Not available.
YPH 501 Yeast Strain	Not available.

Particle characteristics

Median particle size :

pESC-HIS Vector	Not applicable.
GAL 1 Forward Primer Lyophilized	Not available.
GAL 1 Reverse Primer Lyophilized	Not available.
GAL 10 Forward Primer Lyophilized	Not available.
GAL 10 Reverse Primer Lyophilized	Not available.
YPH 499 Yeast Strain	Not applicable.
YPH 500 Yeast Strain	Not applicable.
YPH 501 Yeast Strain	Not applicable.

Section 10. Stability and reactivity

10.1 Reactivity	: pESC-HIS Vector	No specific test data related to reactivity available for this product or its ingredients.
	GAL 1 Forward Primer Lyophilized	No specific test data related to reactivity available for this product or its ingredients.
	GAL 1 Reverse Primer Lyophilized	No specific test data related to reactivity available for this product or its ingredients.
	GAL 10 Forward Primer Lyophilized	No specific test data related to reactivity available for this product or its ingredients.
	GAL 10 Reverse Primer Lyophilized	No specific test data related to reactivity available for this product or its ingredients.
	YPH 499 Yeast Strain	No specific test data related to reactivity available for this product or its ingredients.
	YPH 500 Yeast Strain	No specific test data related to reactivity available for this product or its ingredients.
	YPH 501 Yeast Strain	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: pESC-HIS Vector	The product is stable.
	GAL 1 Forward Primer Lyophilized	The product is stable.
	GAL 1 Reverse Primer Lyophilized	The product is stable.
	GAL 10 Forward Primer Lyophilized	The product is stable.
	GAL 10 Reverse Primer Lyophilized	The product is stable.
	YPH 499 Yeast Strain	The product is stable.
	YPH 500 Yeast Strain	The product is stable.
	YPH 501 Yeast Strain	The product is stable.
10.3 Possibility of hazardous reactions	: pESC-HIS Vector	Under normal conditions of storage and use, hazardous reactions will not occur.
	GAL 1 Forward Primer Lyophilized	Under normal conditions of storage and use, hazardous reactions will not occur.
	GAL 1 Reverse Primer Lyophilized	Under normal conditions of storage and use, hazardous reactions will not occur.
	GAL 10 Forward Primer Lyophilized	Under normal conditions of storage and use, hazardous reactions will not occur.
	GAL 10 Reverse Primer Lyophilized	Under normal conditions of storage and use, hazardous reactions will not occur.
	YPH 499 Yeast Strain	Under normal conditions of storage and use, hazardous reactions will not occur.
	YPH 500 Yeast Strain	Under normal conditions of storage and use, hazardous reactions will not occur.
	YPH 501 Yeast Strain	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: pESC-HIS Vector	No specific data.
	GAL 1 Forward Primer Lyophilized	No specific data.
	GAL 1 Reverse Primer Lyophilized	No specific data.
	GAL 10 Forward Primer Lyophilized	No specific data.
	GAL 10 Reverse Primer Lyophilized	No specific data.
	YPH 499 Yeast Strain	No specific data.
	YPH 500 Yeast Strain	No specific data.
	YPH 501 Yeast Strain	No specific data.

Section 10. Stability and reactivity

10.5 Incompatible materials	: pESC-HIS Vector	May react or be incompatible with oxidizing materials.
	GAL 1 Forward Primer Lyophilized	May react or be incompatible with oxidizing materials.
	GAL 1 Reverse Primer Lyophilized	May react or be incompatible with oxidizing materials.
	GAL 10 Forward Primer Lyophilized	May react or be incompatible with oxidizing materials.
	GAL 10 Reverse Primer Lyophilized	May react or be incompatible with oxidizing materials.
	YPH 499 Yeast Strain	May react or be incompatible with oxidizing materials.
	YPH 500 Yeast Strain	May react or be incompatible with oxidizing materials.
	YPH 501 Yeast Strain	May react or be incompatible with oxidizing materials.

10.6 Hazardous decomposition products	: pESC-HIS Vector	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	GAL 1 Forward Primer Lyophilized	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	GAL 1 Reverse Primer Lyophilized	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	GAL 10 Forward Primer Lyophilized	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	GAL 10 Reverse Primer Lyophilized	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	YPH 499 Yeast Strain	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	YPH 500 Yeast Strain	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	YPH 501 Yeast Strain	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
YPH 499 Yeast Strain Glycerol	LD50 Oral	Rat	12600 mg/kg	-
YPH 500 Yeast Strain Glycerol	LD50 Oral	Rat	12600 mg/kg	-
YPH 501 Yeast Strain Glycerol	LD50 Oral	Rat	12600 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
YPH 499 Yeast Strain Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
YPH 500 Yeast Strain Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
YPH 501 Yeast Strain Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-

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

: pESC-HIS Vector	Not available.
GAL 1 Forward Primer Lyophilized	Not available.
GAL 1 Reverse Primer Lyophilized	Not available.
GAL 10 Forward Primer Lyophilized	Not available.
GAL 10 Reverse Primer Lyophilized	Not available.
YPH 499 Yeast Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.
YPH 500 Yeast Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.
YPH 501 Yeast Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Section 11. Toxicological information

Eye contact	: pESC-HIS Vector	No known significant effects or critical hazards.
	GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	YPH 499 Yeast Strain	Causes eye irritation.
	YPH 500 Yeast Strain	Causes eye irritation.
Inhalation	: pESC-HIS Vector	No known significant effects or critical hazards.
	GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	YPH 499 Yeast Strain	No known significant effects or critical hazards.
	YPH 500 Yeast Strain	No known significant effects or critical hazards.
Skin contact	: pESC-HIS Vector	No known significant effects or critical hazards.
	GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	YPH 499 Yeast Strain	No known significant effects or critical hazards.
	YPH 500 Yeast Strain	No known significant effects or critical hazards.
Ingestion	: pESC-HIS Vector	No known significant effects or critical hazards.
	GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	YPH 499 Yeast Strain	No known significant effects or critical hazards.
	YPH 500 Yeast Strain	No known significant effects or critical hazards.
	YPH 501 Yeast Strain	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: pESC-HIS Vector	No specific data.
	GAL 1 Forward Primer Lyophilized	No specific data.
	GAL 1 Reverse Primer Lyophilized	No specific data.
	GAL 10 Forward Primer Lyophilized	No specific data.
	GAL 10 Reverse Primer Lyophilized	No specific data.
	YPH 499 Yeast Strain	Adverse symptoms may include the following: irritation watering redness
	YPH 500 Yeast Strain	Adverse symptoms may include the following: irritation watering redness
	YPH 501 Yeast Strain	Adverse symptoms may include the following: irritation

Section 11. Toxicological information

		watering redness
Inhalation	: pESC-HIS Vector	No specific data.
	GAL 1 Forward Primer Lyophilized	No specific data.
	GAL 1 Reverse Primer Lyophilized	No specific data.
	GAL 10 Forward Primer Lyophilized	No specific data.
	GAL 10 Reverse Primer Lyophilized	No specific data.
	YPH 499 Yeast Strain	No specific data.
	YPH 500 Yeast Strain	No specific data.
	YPH 501 Yeast Strain	No specific data.
Skin contact	: pESC-HIS Vector	No specific data.
	GAL 1 Forward Primer Lyophilized	No specific data.
	GAL 1 Reverse Primer Lyophilized	No specific data.
	GAL 10 Forward Primer Lyophilized	No specific data.
	GAL 10 Reverse Primer Lyophilized	No specific data.
	YPH 499 Yeast Strain	No specific data.
	YPH 500 Yeast Strain	No specific data.
	YPH 501 Yeast Strain	No specific data.
Ingestion	: pESC-HIS Vector	No specific data.
	GAL 1 Forward Primer Lyophilized	No specific data.
	GAL 1 Reverse Primer Lyophilized	No specific data.
	GAL 10 Forward Primer Lyophilized	No specific data.
	GAL 10 Reverse Primer Lyophilized	No specific data.
	YPH 499 Yeast Strain	No specific data.
	YPH 500 Yeast Strain	No specific data.
	YPH 501 Yeast Strain	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	: pESC-HIS Vector	No known significant effects or critical hazards.
	GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	YPH 499 Yeast Strain	No known significant effects or critical hazards.
	YPH 500 Yeast Strain	No known significant effects or critical hazards.
	YPH 501 Yeast Strain	No known significant effects or critical hazards.

Section 11. Toxicological information

Carcinogenicity	: pESC-HIS Vector	No known significant effects or critical hazards.
	GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	YPH 499 Yeast Strain	No known significant effects or critical hazards.
	YPH 500 Yeast Strain	No known significant effects or critical hazards.
	YPH 501 Yeast Strain	No known significant effects or critical hazards.
Mutagenicity	: pESC-HIS Vector	No known significant effects or critical hazards.
	GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	YPH 499 Yeast Strain	No known significant effects or critical hazards.
	YPH 500 Yeast Strain	No known significant effects or critical hazards.
	YPH 501 Yeast Strain	No known significant effects or critical hazards.
Reproductive toxicity	: pESC-HIS Vector	No known significant effects or critical hazards.
	GAL 1 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 1 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Forward Primer Lyophilized	No known significant effects or critical hazards.
	GAL 10 Reverse Primer Lyophilized	No known significant effects or critical hazards.
	YPH 499 Yeast Strain	No known significant effects or critical hazards.
	YPH 500 Yeast Strain	No known significant effects or critical hazards.
	YPH 501 Yeast Strain	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
YPH 499 Yeast Strain Glycerol	12600	N/A	N/A	N/A	N/A
YPH 500 Yeast Strain Glycerol	12600	N/A	N/A	N/A	N/A
YPH 501 Yeast Strain Glycerol	12600	N/A	N/A	N/A	N/A

Other information	: pESC-HIS Vector	Not available.
	GAL 1 Forward Primer Lyophilized	Not available.
	GAL 1 Reverse Primer Lyophilized	Not available.
	GAL 10 Forward Primer Lyophilized	Not available.
	GAL 10 Reverse Primer Lyophilized	Not available.
	YPH 499 Yeast Strain	Not available.
	YPH 500 Yeast Strain	Not available.
	YPH 501 Yeast Strain	Not available.

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
YPH 499 Yeast Strain Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
YPH 500 Yeast Strain Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
YPH 501 Yeast Strain Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
YPH 499 Yeast Strain Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
YPH 500 Yeast Strain Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
YPH 501 Yeast Strain Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
YPH 499 Yeast Strain Glycerol	-1.76	-	low
YPH 500 Yeast Strain Glycerol	-1.76	-	low
YPH 501 Yeast Strain Glycerol	-1.76	-	low

12.4 Mobility in soil

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

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

Section 13. Disposal considerations

13.1 Waste treatment methods

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. 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

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

Section 15. Regulatory information

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification	:	pESC-HIS Vector	Not applicable.
		GAL 1 Forward Primer Lyophilized	Not applicable.
		GAL 1 Reverse Primer Lyophilized	Not applicable.
		GAL 10 Forward Primer Lyophilized	Not applicable.
		GAL 10 Reverse Primer Lyophilized	Not applicable.
		YPH 499 Yeast Strain	EYE IRRITATION - Category 2B
		YPH 500 Yeast Strain	EYE IRRITATION - Category 2B
		YPH 501 Yeast Strain	EYE IRRITATION - Category 2B

Composition/information on ingredients

Name	%	Classification
YPH 499 Yeast Strain		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2B
L-Glucose	≤3	COMBUSTIBLE DUSTS
YPH 500 Yeast Strain		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2B
L-Glucose	≤3	COMBUSTIBLE DUSTS
YPH 501 Yeast Strain		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2B
L-Glucose	≤3	COMBUSTIBLE DUSTS

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

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

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list


Australia : Not determined.

Canada : Not determined.

China : Not determined.


Europe : ☒ Not determined.

Section 15. Regulatory information

Japan	: Japan inventory (CSCL): Not determined. Japan inventory (ISHL): Not determined.
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: Not determined.
Taiwan	:  Not determined.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: Not determined.
Viet Nam	: Not determined.

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
 YPH 499 Yeast Strain EYE IRRITATION - Category 2B	Calculation method
YPH 500 Yeast Strain EYE IRRITATION - Category 2B	Calculation method
YPH 501 Yeast Strain EYE IRRITATION - Category 2B	Calculation method

History

Date of issue	: 11/03/2021
Date of previous issue	: 05/31/2019
Version	: 5
Key to abbreviations	: ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) N/A = Not available UN = United Nations

 Indicates information that has changed from previously issued version.

Notice to reader

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