

SAFETY DATA SHEET

RNA Isolation Kit, Part Number 200345

Section 1. Identification

Product identifier	: RNA Isolation Kit, Part Number 200345		
Part no. (chemical kit)	: 200345		
Part no.	<input checked="" type="checkbox"/> -Mercaptoethanol		200345-21
	Isopropanol		200345-17
	Denaturing solution		200345-14
	2M Sodium Acetate		200345-16
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid		200345-64
	RNA Isolation Chloroform, Isoamyl Alcohol		200345-18

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

Material uses	: Analytical reagent.		
	<input checked="" type="checkbox"/> -Mercaptoethanol	0.75 mL (750 µl	14.33 M)
	Isopropanol	100 mL	
	Denaturing solution	100 mL	
	2M Sodium Acetate	pH : 4.0	7.5 mL
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	75 mL	
	RNA Isolation Chloroform, Isoamyl Alcohol	15 mL	

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

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

Section 2. Hazard(s) identification

Classification of the substance or mixture

-Mercaptoethanol

H227	FLAMMABLE LIQUIDS - Category 4
H301	ACUTE TOXICITY (oral) - Category 3
H310	ACUTE TOXICITY (dermal) - Category 2
H330	ACUTE TOXICITY (inhalation) - Category 2
H315	SKIN CORROSION/IRRITATION - Category 2
H318	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
H317	SKIN SENSITISATION - Category 1
H335	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3
H411	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2

Isopropanol

H225	FLAMMABLE LIQUIDS - Category 2
H319	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A
H336	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3

Denaturing solution

H302	ACUTE TOXICITY (oral) - Category 4
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Section 2. Hazard(s) identification

H332 ACUTE TOXICITY (inhalation) - Category 4
 H412 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3

2M Sodium Acetate

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

RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid

H227 FLAMMABLE LIQUIDS - Category 4
 H301 ACUTE TOXICITY (oral) - Category 3
 H311 ACUTE TOXICITY (dermal) - Category 3
 H331 ACUTE TOXICITY (inhalation) - Category 3
 H314 SKIN CORROSION/IRRITATION - Category 1B
 H318 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
 H341 GERM CELL MUTAGENICITY - Category 2
 H373 SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2

RNA Isolation Chloroform, Isoamyl Alcohol

H302 ACUTE TOXICITY (oral) - Category 4
 H331 ACUTE TOXICITY (inhalation) - Category 3
 H315 SKIN CORROSION/IRRITATION - Category 2
 H319 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A
 H351 CARCINOGENICITY - Category 2
 H361 REPRODUCTIVE TOXICITY (Unborn child) - Category 2
 H372 SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 1

<p>2M Sodium Acetate</p>	<p>Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 10 - 30%</p> <p>Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%</p>
<p>RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid</p>	<p>Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%</p> <p>Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 1 - 10%</p>
<p>RNA Isolation Chloroform, Isoamyl Alcohol</p>	<p>Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1 - 10%</p>
<p>RNA Isolation Chloroform, Isoamyl Alcohol</p>	<p>Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 2%</p>

[GHS label elements](#)

Section 2. Hazard(s) identification

Hazard pictograms	: <input checked="" type="checkbox"/> Mercaptoethanol	
	Isopropanol	
	Denaturing solution	
	2M Sodium Acetate	
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	
	RNA Isolation Chloroform, Isoamyl Alcohol	
Signal word	: <input checked="" type="checkbox"/> Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	DANGER DANGER WARNING WARNING DANGER DANGER
Hazard statements	: <input checked="" type="checkbox"/> Mercaptoethanol	H227 - Combustible liquid. H310 + H330 - Fatal in contact with skin or if inhaled. H301 - Toxic if swallowed. H318 - Causes serious eye damage. H315 - Causes skin irritation. H317 - May cause an allergic skin reaction. H335 - May cause respiratory irritation. H411 - Toxic to aquatic life with long lasting effects.
	Isopropanol	H225 - Highly flammable liquid and vapour. H319 - Causes serious eye irritation. H336 - May cause drowsiness or dizziness.
	Denaturing solution	H302 + H332 - Harmful if swallowed or if inhaled. H412 - Harmful to aquatic life with long lasting effects.
	2M Sodium Acetate	H319 - Causes serious eye irritation. H315 - Causes skin irritation.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	H227 - Combustible liquid. H301 + H311 + H331 - Toxic if swallowed, in contact with skin or if inhaled. H314 - Causes severe skin burns and eye damage. H341 - Suspected of causing genetic defects. H373 - May cause damage to organs through prolonged or repeated exposure.

Section 2. Hazard(s) identification

RNA Isolation Chloroform,
Isoamyl Alcohol

H331 - Toxic if inhaled.

H302 - Harmful if swallowed.

H319 - Causes serious eye irritation.

H315 - Causes skin irritation.

H361 - Suspected of damaging the unborn child.

H351 - Suspected of causing cancer.

H372 - Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention

:  Mercaptoethanol

P280 - Wear protective gloves. Wear eye or face protection.

P284 - Wear respiratory protection.

P210 - Keep away from flames and hot surfaces. - No smoking.

P271 - Use only outdoors or in a well-ventilated area.

P273 - Avoid release to the environment.

P262 - Do not get in eyes, on skin, or on clothing.

P260 - Do not breathe vapour.

P270 - Do not eat, drink or smoke when using this product.

P264 - Wash hands thoroughly after handling.

P272 - Contaminated work clothing should not be allowed out of the workplace.

Isopropanol

P280 - Wear protective gloves. Wear eye or face protection.

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.

P242 - Use only non-sparking tools.

P243 - Take precautionary measures against static discharge.

P233 - Keep container tightly closed.

P271 - Use only outdoors or in a well-ventilated area.

P261 - Avoid breathing vapour.

P264 - Wash hands thoroughly after handling.

Denaturing solution

P271 - Use only outdoors or in a well-ventilated area.

P273 - Avoid release to the environment.

P261 - Avoid breathing vapour.

P270 - Do not eat, drink or smoke when using this product.

2M Sodium Acetate

P264 - Wash hands thoroughly after handling.

P280 - Wear protective gloves. Wear eye or face protection.

P264 - Wash hands thoroughly after handling.

RNA Phenol pH 5.3 - 5.7
Equilibrated with Succinic
Acid

P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood.

P281 - Use personal protective equipment as required.

P280 - Wear protective gloves. Wear eye or face protection. Wear protective clothing.

P210 - Keep away from flames and hot surfaces. - No smoking.

P271 - Use only outdoors or in a well-ventilated area.

P260 - Do not breathe vapour.

P270 - Do not eat, drink or smoke when using this product.

RNA Isolation Chloroform,

P264 - Wash hands thoroughly after handling.

P201 - Obtain special instructions before use.

Section 2. Hazard(s) identification

Isoamyl Alcohol

P202 - Do not handle until all safety precautions have been read and understood.

P281 - Use personal protective equipment as required.

P280 - Wear protective gloves. Wear eye or face protection.

P271 - Use only outdoors or in a well-ventilated area.

P260 - Do not breathe vapour.

P270 - Do not eat, drink or smoke when using this product.

P264 - Wash hands thoroughly after handling.

P391 - Collect spillage.

P304 + P340 + P310 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician.

P301 + P310 + P330 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth.

P302 + P361 + P350 + P310 + P362 + P363 - IF ON SKIN: Take off immediately all contaminated clothing. Gently wash with plenty of soap and water.

Immediately call a POISON CENTER or physician.

Take off contaminated clothing. Wash contaminated clothing before reuse.

P333 + P313 - If skin irritation or rash occurs: Get medical attention.

P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 - If eye irritation persists: Get medical attention.

P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.

P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth.

P302 + P352 + P362 + P363 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse.

P332 + P313 - If skin irritation occurs: Get medical attention.

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 - If eye irritation persists: Get medical attention.

P314 - Get medical attention if you feel unwell.

Response

:  Mercaptoethanol

Isopropanol

Denaturing solution

2M Sodium Acetate

RNA Phenol pH 5.3 - 5.7

Section 2. Hazard(s) identification

Equilibrated with Succinic Acid

P308 + P313 - IF exposed or concerned: Get medical attention.
 P304 + P340 + P310 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician.
 P301 + P310 + P330 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting.
 P303 + P361 + P353 + P363 + P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician.
 P302 + P352 + P312 - IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell.
 P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
 P314 - Get medical attention if you feel unwell.

RNA Isolation Chloroform, Isoamyl Alcohol

P308 + P313 - IF exposed or concerned: Get medical attention.
 P304 + P340 + P311 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician.
 P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth.
 P302 + P352 + P362 + P363 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse.
 P332 + P313 - If skin irritation occurs: Get medical attention.
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337 + P313 - If eye irritation persists: Get medical attention.

Storage

: -Mercaptoethanol

P405 - Store locked up.
 P403 - Store in a well-ventilated place.
 P235 - Keep cool.

Isopropanol

P405 - Store locked up.
 P403 - Store in a well-ventilated place.
 P235 - Keep cool.

Denaturing solution
 2M Sodium Acetate
 RNA Phenol pH 5.3 - 5.7
 Equilibrated with Succinic Acid

Not applicable.
 Not applicable.
 P405 - Store locked up.

RNA Isolation Chloroform, Isoamyl Alcohol

P403 - Store in a well-ventilated place.
 P235 - Keep cool.
 P405 - Store locked up.

Section 2. Hazard(s) identification

Disposal	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Supplemental label elements		
Additional warning phrases	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Other hazards which do not result in classification	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	None known. None known. None known. None known. Causes digestive tract burns. None known.

Section 3. Composition and ingredient information

Substance/mixture	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	Substance Substance Mixture Mixture Mixture Mixture
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CAS number/other identifiers

Ingredient name	% (w/w)	CAS number
<input checked="" type="checkbox"/> -Mercaptoethanol β-Mercaptoethanol	100	60-24-2
Isopropanol Propan-2-ol	100	67-63-0
Denaturing solution Guanidinium thiocyanate	≥30 - ≤55	593-84-0

Section 3. Composition and ingredient information

2M Sodium Acetate acetic acid	≥10 - ≤30	64-19-7
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid Phenol Succinic acid	≥90 ≤3	108-95-2 110-15-6
RNA Isolation Chloroform, Isoamyl Alcohol Trichloromethane 3-Methylbutan-1-ol	≥90 ≤3	67-66-3 123-51-3

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

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

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: -Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
	Isopropanol	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	Denaturing solution	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
	2M Sodium Acetate	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
	RNA Isolation Chloroform, Isoamyl Alcohol	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	: -Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie,

Section 4. First aid measures

Isopropanol

belt or waistband.

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. 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.

Denaturing solution

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

2M Sodium Acetate

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.

RNA Phenol pH 5.3 - 5.7
Equilibrated with Succinic
Acid

Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

RNA Isolation Chloroform,
Isoamyl Alcohol

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or

Section 4. First aid measures

		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 necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	:  -Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Gently wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	Isopropanol	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.
	Denaturing solution	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.
	2M Sodium Acetate	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	RNA Isolation Chloroform, Isoamyl Alcohol	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	:  -Mercaptoethanol	Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention

Section 4. First aid measures

Isopropanol

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

Denaturing solution

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

2M Sodium Acetate

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

RNA Phenol pH 5.3 - 5.7
Equilibrated with Succinic
Acid

Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an

Section 4. First aid measures

RNA Isolation Chloroform,
Isoamyl Alcohol

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

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	Causes serious eye damage. Causes serious eye irritation. No known significant effects or critical hazards. Causes serious eye irritation. Causes serious eye damage. Causes serious eye irritation.
Inhalation	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	Fatal if inhaled. May cause respiratory irritation. Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. Harmful if inhaled. No known significant effects or critical hazards. Toxic if inhaled. Toxic if inhaled.
Skin contact	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	Fatal in contact with skin. Causes skin irritation. May cause an allergic skin reaction. No known significant effects or critical hazards. No known significant effects or critical hazards. Causes skin irritation. Causes severe burns. Toxic in contact with skin. Causes skin irritation.
Ingestion	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	Toxic if swallowed. Can cause central nervous system (CNS) depression. Harmful if swallowed. No known significant effects or critical hazards. Toxic if swallowed. Corrosive to the digestive tract. Causes burns. Harmful if swallowed.

Section 4. First aid measures

Over-exposure signs/symptoms

Eye contact	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
		Isopropanol	Adverse symptoms may include the following: pain or irritation watering redness
		Denaturing solution 2M Sodium Acetate	No specific data. Adverse symptoms may include the following: pain or irritation watering redness
		RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Adverse symptoms may include the following: pain watering redness
		RNA Isolation Chloroform, Isoamyl Alcohol	Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Adverse symptoms may include the following: respiratory tract irritation coughing
		Isopropanol	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
		Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	No specific data. No specific data. No specific data.
		RNA Isolation Chloroform, Isoamyl Alcohol	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Skin contact	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur
		Isopropanol Denaturing solution 2M Sodium Acetate	No specific data. No specific data. Adverse symptoms may include the following: irritation redness
		RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Adverse symptoms may include the following: pain or irritation redness blistering may occur
		RNA Isolation Chloroform, Isoamyl Alcohol	Adverse symptoms may include the following: irritation redness

Section 4. First aid measures

Ingestion	:	β-Mercaptoethanol	reduced foetal weight increase in foetal deaths skeletal malformations
		Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Adverse symptoms may include the following: stomach pains No specific data. No specific data. No specific data. Adverse symptoms may include the following:
		RNA Isolation Chloroform, Isoamyl Alcohol	stomach pains Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations

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

Notes to physician	:	β-Mercaptoethanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		Isopropanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		Denaturing solution	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.
		2M Sodium Acetate	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
		RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments	:	β-Mercaptoethanol	No specific treatment.
		Isopropanol	No specific treatment.
		Denaturing solution	No specific treatment.
		2M Sodium Acetate	No specific treatment.
		RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	No specific treatment.
		RNA Isolation Chloroform, Isoamyl Alcohol	No specific treatment.

Protection of first-aiders	:	β-Mercaptoethanol	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
		Isopropanol	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 4. First aid measures

Denaturing solution	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
2M Sodium Acetate	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.
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
RNA Isolation Chloroform, Isoamyl Alcohol	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media	: <input checked="" type="checkbox"/> Mercaptoethanol Isopropanol Denaturing solution	Use dry chemical, CO ₂ , water spray (fog) or foam. Use dry chemical, CO ₂ , water spray (fog) or foam. Use an extinguishing agent suitable for the surrounding fire.
	2M Sodium Acetate	Use an extinguishing agent suitable for the surrounding fire.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Use dry chemical, CO ₂ , water spray (fog) or foam.
	RNA Isolation Chloroform, Isoamyl Alcohol	Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media	: <input checked="" type="checkbox"/> Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	Do not use water jet. Do not use water jet. None known. None known. Do not use water jet. None known.
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Specific hazards arising from the chemical	: <input checked="" type="checkbox"/> Mercaptoethanol	Combustible liquid. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or
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Section 5. Firefighting measures

	Isopropanol	drain. Highly flammable liquid and vapour. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.
	Denaturing solution	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
	2M Sodium Acetate	In a fire or if heated, a pressure increase will occur and the container may burst.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Combustible liquid. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
	RNA Isolation Chloroform, Isoamyl Alcohol	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	:  -Mercaptoethanol	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
	Isopropanol	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	Denaturing solution	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides
	2M Sodium Acetate	Decomposition products may include the following materials: carbon dioxide carbon monoxide metal oxide/oxides
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	RNA Isolation Chloroform, Isoamyl Alcohol	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds carbonyl halides
Special protective actions for fire-fighters	:  -Mercaptoethanol	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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
	Isopropanol	Promptly isolate the scene by removing all persons

Section 5. Firefighting measures

		from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
	Denaturing solution	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.
	2M Sodium Acetate	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.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
	RNA Isolation Chloroform, Isoamyl Alcohol	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	:  -Mercaptoethanol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Isopropanol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Denaturing solution	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	2M Sodium Acetate	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	RNA Isolation Chloroform, Isoamyl Alcohol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Hazchem code	:  -Mercaptoethanol	2X
	Isopropanol	•2YE
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	2X
	RNA Isolation Chloroform, Isoamyl Alcohol	2Z

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: -Mercaptoethanol

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Isopropanol

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Denaturing solution

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

2M Sodium Acetate

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

RNA Phenol pH 5.3 - 5.7
Equilibrated with Succinic
Acid

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

RNA Isolation Chloroform,
Isoamyl Alcohol

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

For emergency responders

: -Mercaptoethanol

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

Isopropanol

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the

Section 6. Accidental release measures

Denaturing solution	information in "For non-emergency personnel". If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
2M Sodium Acetate	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
RNA Isolation Chloroform, Isoamyl Alcohol	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions :  -Mercaptoethanol	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.
Isopropanol	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Denaturing solution	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
2M Sodium Acetate	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
RNA Isolation Chloroform, Isoamyl Alcohol	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Methods for cleaning up :  -Mercaptoethanol	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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.
Isopropanol	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof

Section 6. Accidental release measures

	equipment. 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.
Denaturing solution	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.
2M Sodium Acetate	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.
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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.
RNA Isolation Chloroform, Isoamyl Alcohol	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

: -Mercaptoethanol

Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

Isopropanol

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-

Section 7. Handling and storage

Denaturing solution

proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.

2M Sodium Acetate

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

RNA Phenol pH 5.3 - 5.7
Equilibrated with Succinic
Acid

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

RNA Isolation Chloroform,
Isoamyl Alcohol

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

**Advice on general
occupational hygiene**

: -Mercaptoethanol

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.

Isopropanol

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and

Section 7. Handling and storage

Denaturing solution

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.

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.

2M Sodium Acetate

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.

RNA Phenol pH 5.3 - 5.7
Equilibrated with Succinic
Acid

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.

RNA Isolation Chloroform,
Isoamyl Alcohol

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.

Conditions for safe storage, including any incompatibilities : -Mercaptoethanol

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

Isopropanol

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

Denaturing solution

Section 7. Handling and storage

2M Sodium Acetate

incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

RNA Phenol pH 5.3 - 5.7
Equilibrated with Succinic
Acid

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

RNA Isolation Chloroform,
Isoamyl Alcohol

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

Section 8. Exposure controls and personal protection

[Control parameters](#)

[Occupational exposure limits](#)

Ingredient name	Exposure limits
<p>Isopropanol Propan-2-ol</p> <p>2M Sodium Acetate acetic acid</p>	<p>Safe Work Australia (Australia, 1/2014). STEL: 1230 mg/m³ 15 minutes. STEL: 500 ppm 15 minutes. TWA: 983 mg/m³ 8 hours. TWA: 400 ppm 8 hours.</p> <p>Safe Work Australia (Australia, 1/2014). STEL: 37 mg/m³ 15 minutes. STEL: 15 ppm 15 minutes. TWA: 25 mg/m³ 8 hours. TWA: 10 ppm 8 hours.</p>

Section 8. Exposure controls and personal protection

<p>RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid Phenol</p> <p>Succinic acid</p>	<p>Safe Work Australia (Australia, 1/2014). Absorbed through skin. TWA: 4 mg/m³ 8 hours. TWA: 1 ppm 8 hours.</p> <p>DFG MAC-values list (Germany, 7/2017). PEAK: 4 mg/m³, 4 times per shift, 15 minutes. Form: Inhalable fraction TWA: 2 mg/m³ 8 hours. Form: Inhalable fraction</p>
<p>RNA Isolation Chloroform, Isoamyl Alcohol Trichloromethane</p> <p>3-Methylbutan-1-ol</p>	<p>Safe Work Australia (Australia, 1/2014). Absorbed through skin. TWA: 10 mg/m³ 8 hours. TWA: 2 ppm 8 hours.</p> <p>Safe Work Australia (Australia, 1/2014). STEL: 452 mg/m³ 15 minutes. STEL: 125 ppm 15 minutes. TWA: 361 mg/m³ 8 hours. TWA: 100 ppm 8 hours.</p>

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- 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. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Section 8. Exposure controls and personal protection

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

Section 9. Physical and chemical properties

Appearance

Physical state	<input checked="" type="checkbox"/> -Mercaptoethanol	Liquid.
	Isopropanol	Liquid.
	Denaturing solution	Liquid.
	2M Sodium Acetate	Liquid.
	RNA Phenol pH 5.3 - 5.7	Liquid.
	Equilibrated with Succinic Acid	
	RNA Isolation Chloroform, Isoamyl Alcohol	Liquid.
Colour	<input checked="" type="checkbox"/> -Mercaptoethanol	Colourless.
	Isopropanol	Colourless.
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7	Not available.
	Equilibrated with Succinic Acid	
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
Odour	<input checked="" type="checkbox"/> -Mercaptoethanol	Characteristic.
	Isopropanol	Alcohol-like.
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7	Not available.
	Equilibrated with Succinic Acid	
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
Odour threshold	<input checked="" type="checkbox"/> -Mercaptoethanol	Not available.
	Isopropanol	Not available.
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7	Not available.
	Equilibrated with Succinic Acid	
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
pH	<input checked="" type="checkbox"/> -Mercaptoethanol	Not available.
	Isopropanol	Not available.
	Denaturing solution	7
	2M Sodium Acetate	4
	RNA Phenol pH 5.3 - 5.7	5.3 to 5.7
	Equilibrated with Succinic Acid	
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.

Section 9. Physical and chemical properties

Melting point	: <input checked="" type="checkbox"/> -Mercaptoethanol	-100°C (-148°F)
	Isopropanol	-90°C (-130°F)
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	40.85°C (105.5°F)
	RNA Isolation Chloroform, Isoamyl Alcohol	-64°C (-83.2°F)
Boiling point	: <input checked="" type="checkbox"/> -Mercaptoethanol	157°C (314.6°F)
	Isopropanol	83°C (181.4°F)
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	182°C (359.6°F)
	RNA Isolation Chloroform, Isoamyl Alcohol	62°C (143.6°F)
Flash point	: <input checked="" type="checkbox"/> -Mercaptoethanol	Closed cup: 74°C (165.2°F) Open cup: 74°C (165.2°F)
	Isopropanol	Closed cup: 11.7°C (53.1°F)
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Closed cup: 79°C (174.2°F)
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
Evaporation rate	: <input checked="" type="checkbox"/> -Mercaptoethanol	Not available.
	Isopropanol	Not available.
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
Flammability (solid, gas)	: <input checked="" type="checkbox"/> -Mercaptoethanol	Not applicable.
	Isopropanol	Not applicable.
	Denaturing solution	Not applicable.
	2M Sodium Acetate	Not applicable.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not applicable.
	RNA Isolation Chloroform, Isoamyl Alcohol	Not applicable.
Lower and upper explosive (flammable) limits	: <input checked="" type="checkbox"/> -Mercaptoethanol	Lower: 2.3% Upper: 18%
	Isopropanol	Lower: 2% Upper: 12%
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Lower: 1.36%
	RNA Isolation Chloroform, Isoamyl Alcohol	Upper: 10% Not available.

Section 9. Physical and chemical properties

Vapour pressure	: <input checked="" type="checkbox"/> -Mercaptoethanol	0.13 kPa (0.98 mm Hg) [room temperature]
	Isopropanol	4.4 kPa (33 mm Hg) [room temperature]
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
Vapour density	: <input checked="" type="checkbox"/> -Mercaptoethanol	2.7 [Air = 1]
	Isopropanol	2.1 [Air = 1]
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
Relative density	: <input checked="" type="checkbox"/> -Mercaptoethanol	1.1
	Isopropanol	0.79
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
Solubility	: <input checked="" type="checkbox"/> -Mercaptoethanol	Easily soluble in the following materials: cold water and hot water.
	Isopropanol	Easily soluble in the following materials: cold water and hot water.
	Denaturing solution	Soluble in the following materials: cold water and hot water.
	2M Sodium Acetate	Easily soluble in the following materials: cold water and hot water.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
	RNA Isolation Chloroform, Isoamyl Alcohol	Very slightly soluble in the following materials: cold water and hot water.
Partition coefficient: n- octanol/water	: <input checked="" type="checkbox"/> -Mercaptoethanol	-0.056
	Isopropanol	Not available.
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
Auto-ignition temperature	: <input checked="" type="checkbox"/> -Mercaptoethanol	295°C (563°F)
	Isopropanol	Not available.
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
	RNA Isolation Chloroform, Isoamyl Alcohol	Not available.

Section 9. Physical and chemical properties

Decomposition temperature	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Not available.
		Isopropanol	Not available.
		Denaturing solution	Not available.
		2M Sodium Acetate	Not available.
		RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
		RNA Isolation Chloroform, Isoamyl Alcohol	Not available.
Viscosity	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Dynamic (room temperature): 3.43 mPa·s (3.43 cP)
		Isopropanol	Not available.
		Denaturing solution	Not available.
		2M Sodium Acetate	Not available.
		RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
		RNA Isolation Chloroform, Isoamyl Alcohol	Not available.

Section 10. Stability and reactivity

Reactivity	:	<input checked="" type="checkbox"/> -Mercaptoethanol	No specific test data related to reactivity available for this product or its ingredients.
		Isopropanol	No specific test data related to reactivity available for this product or its ingredients.
		Denaturing solution	No specific test data related to reactivity available for this product or its ingredients.
		2M Sodium Acetate	No specific test data related to reactivity available for this product or its ingredients.
		RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	No specific test data related to reactivity available for this product or its ingredients.
		RNA Isolation Chloroform, Isoamyl Alcohol	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	<input checked="" type="checkbox"/> -Mercaptoethanol	The product is stable.
		Isopropanol	The product is stable.
		Denaturing solution	The product is stable.
		2M Sodium Acetate	The product is stable.
		RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	The product is stable.
		RNA Isolation Chloroform, Isoamyl Alcohol	The product is stable.
Possibility of hazardous reactions	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Under normal conditions of storage and use, hazardous reactions will not occur.
		Isopropanol	Under normal conditions of storage and use, hazardous reactions will not occur.
		Denaturing solution	Under normal conditions of storage and use, hazardous reactions will not occur.
		2M Sodium Acetate	Under normal conditions of storage and use, hazardous reactions will not occur.
		RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Under normal conditions of storage and use, hazardous reactions will not occur.
		RNA Isolation Chloroform, Isoamyl Alcohol	Under normal conditions of storage and use, hazardous reactions will not occur.

Section 10. Stability and reactivity

Conditions to avoid	: <input checked="" type="checkbox"/> Mercaptoethanol	Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas.
	Isopropanol	Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas.
	Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	No specific data. No specific data. Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
	RNA Isolation Chloroform, Isoamyl Alcohol	No specific data.
Incompatible materials	: <input checked="" type="checkbox"/> Mercaptoethanol	Reactive or incompatible with the following materials: oxidizing materials
	Isopropanol	Reactive or incompatible with the following materials: oxidizing materials
	Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.
	RNA Isolation Chloroform, Isoamyl Alcohol	Reactive or incompatible with the following materials: oxidizing materials May react or be incompatible with oxidising materials.
Hazardous decomposition products	: <input checked="" type="checkbox"/> Mercaptoethanol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Isopropanol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Denaturing solution	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	2M Sodium Acetate	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	RNA Isolation Chloroform, Isoamyl Alcohol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Section 11. Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
β-Mercaptoethanol β-Mercaptoethanol	LD50 Dermal LD50 Oral	Rabbit Rat	167.1 mg/kg 244 mg/kg	- -
Isopropanol Propan-2-ol	LD50 Dermal LD50 Oral	Rabbit Rat	12800 mg/kg 5000 mg/kg	- -
2M Sodium Acetate acetic acid	LC50 Inhalation Vapour LD50 Dermal LD50 Oral	Rat Rabbit Rat	11000 mg/m ³ 1060 mg/kg 3310 mg/kg	4 hours - -
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid Phenol	LC50 Inhalation Dusts and mists LD50 Dermal LD50 Dermal LD50 Oral	Rat Rabbit Rat Rat	316 mg/m ³ 630 mg/kg 669 mg/kg 317 mg/kg	4 hours - - -
Succinic acid	LD50 Oral	Rat	2260 mg/kg	-
RNA Isolation Chloroform, Isoamyl Alcohol Trichloromethane	LD50 Dermal LD50 Oral	Rabbit Rat	>20 g/kg 300 mg/kg	- -
3-Methylbutan-1-ol	LD50 Oral	Rat	1300 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
β-Mercaptoethanol β-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 milligrams	-
Isopropanol Propan-2-ol	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-
2M Sodium Acetate acetic acid	Skin - Severe irritant	Rabbit	-	525 milligrams	-
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid Phenol	Eyes - Severe irritant	Rabbit	-	5 milligrams	-
	Skin - Severe irritant	Rabbit	-	535 milligrams	-
Succinic acid	Eyes - Severe irritant	Rabbit	-	750 Micrograms	-
RNA Isolation Chloroform, Isoamyl Alcohol Trichloromethane	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
3-Methylbutan-1-ol	Eyes - Moderate irritant	Rabbit	-	24 hours 20	-

Section 11. Toxicological information

	Skin - Moderate irritant	Rabbit	-	milligrams 24 hours 20 milligrams	-
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Sensitisation

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)

Name	Category	Route of exposure	Target organs
β-Mercaptoethanol β-Mercaptoethanol	Category 3	Not applicable.	Respiratory tract irritation
Isopropanol Propan-2-ol	Category 3	Not applicable.	Narcotic effects
RNA Isolation Chloroform, Isoamyl Alcohol 3-Methylbutan-1-ol	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid Phenol	Category 2	Not determined	Not determined
RNA Isolation Chloroform, Isoamyl Alcohol Trichloromethane	Category 1	Not determined	Not determined

Aspiration hazard

Not available.

Information on likely routes of exposure :

β-Mercaptoethanol	Routes of entry anticipated: Oral, Dermal, Inhalation.
Isopropanol	Routes of entry anticipated: Oral, Dermal, Inhalation.
Denaturing solution	Routes of entry anticipated: Oral, Dermal, Inhalation.
2M Sodium Acetate	Routes of entry anticipated: Oral, Dermal, Inhalation.
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Routes of entry anticipated: Oral, Dermal, Inhalation.
RNA Isolation Chloroform, Isoamyl Alcohol	Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Section 11. Toxicological information

Eye contact	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Causes serious eye damage.		
		Isopropanol	Causes serious eye irritation.		
Inhalation	:	Denaturing solution	No known significant effects or critical hazards.		
		2M Sodium Acetate	Causes serious eye irritation.		
		RNA Phenol pH 5.3 - 5.7	Causes serious eye damage.		
		Equilibrated with Succinic Acid			
		RNA Isolation Chloroform, Isoamyl Alcohol	Causes serious eye irritation.		
Inhalation	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Fatal if inhaled. May cause respiratory irritation.		
		Isopropanol	Can cause central nervous system (CNS) depression.		
		Denaturing solution	May cause drowsiness or dizziness.		
		2M Sodium Acetate	Harmful if inhaled.		
		RNA Phenol pH 5.3 - 5.7	No known significant effects or critical hazards.		
		Equilibrated with Succinic Acid	Toxic if inhaled.		
Inhalation	:	RNA Isolation Chloroform, Isoamyl Alcohol	Toxic if inhaled.		
		Skin contact	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Fatal in contact with skin. Causes skin irritation. May cause an allergic skin reaction.
				Isopropanol	No known significant effects or critical hazards.
				Denaturing solution	No known significant effects or critical hazards.
				2M Sodium Acetate	Causes skin irritation.
Skin contact	:	RNA Phenol pH 5.3 - 5.7	Causes severe burns. Toxic in contact with skin.		
		Equilibrated with Succinic Acid			
		RNA Isolation Chloroform, Isoamyl Alcohol	Causes skin irritation.		
		Ingestion	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Toxic if swallowed.
				Isopropanol	Can cause central nervous system (CNS) depression.
		Denaturing solution	Harmful if swallowed.		
		2M Sodium Acetate	No known significant effects or critical hazards.		
		RNA Phenol pH 5.3 - 5.7	Toxic if swallowed. Corrosive to the digestive tract.		
		Equilibrated with Succinic Acid	Causes burns.		
		RNA Isolation Chloroform, Isoamyl Alcohol	Harmful if swallowed.		

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	:	<input checked="" type="checkbox"/> -Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
		Isopropanol	Adverse symptoms may include the following: pain or irritation watering redness
		Denaturing solution	No specific data.
		2M Sodium Acetate	Adverse symptoms may include the following: pain or irritation watering redness
		RNA Phenol pH 5.3 - 5.7	Adverse symptoms may include the following: pain watering redness
		Equilibrated with Succinic Acid	
		RNA Isolation Chloroform, Isoamyl Alcohol	Adverse symptoms may include the following:

Section 11. Toxicological information

Inhalation	:  -Mercaptoethanol	pain or irritation watering redness Adverse symptoms may include the following: respiratory tract irritation coughing
	Isopropanol	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
	Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	No specific data. No specific data. No specific data.
	RNA Isolation Chloroform, Isoamyl Alcohol	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Skin contact	:  -Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur
	Isopropanol	No specific data.
	Denaturing solution 2M Sodium Acetate	No specific data. Adverse symptoms may include the following: irritation redness
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Adverse symptoms may include the following: pain or irritation redness blistering may occur
	RNA Isolation Chloroform, Isoamyl Alcohol	Adverse symptoms may include the following: irritation redness reduced foetal weight increase in foetal deaths skeletal malformations
Ingestion	:  -Mercaptoethanol	Adverse symptoms may include the following: stomach pains
	Isopropanol	No specific data.
	Denaturing solution 2M Sodium Acetate	No specific data. No specific data.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Adverse symptoms may include the following: stomach pains
	RNA Isolation Chloroform, Isoamyl Alcohol	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Section 11. Toxicological information

Potential immediate effects	: Not available.	
Potential delayed effects	: Not available.	
<u>Long term exposure</u>		
Potential immediate effects	: Not available.	
Potential delayed effects	: Not available.	
<u>Potential chronic health effects</u>		
General	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. May cause damage to organs through prolonged or repeated exposure. Causes damage to organs through prolonged or repeated exposure.
Carcinogenicity	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	No known significant effects or critical hazards. No known significant effects or critical hazards. Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. Suspected of causing genetic defects. No known significant effects or critical hazards.
Teratogenicity	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	No known significant effects or critical hazards. No known significant effects or critical hazards. Suspected of damaging the unborn child.
Developmental effects	: <input checked="" type="checkbox"/> -Mercaptoethanol Isopropanol Denaturing solution 2M Sodium Acetate RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid RNA Isolation Chloroform, Isoamyl Alcohol	No known significant effects or critical hazards. No known significant effects or critical hazards.

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Fertility effects	: <input checked="" type="checkbox"/> Mercaptoethanol	No known significant effects or critical hazards.
	Isopropanol	No known significant effects or critical hazards.
	Denaturing solution	No known significant effects or critical hazards.
	2M Sodium Acetate	No known significant effects or critical hazards.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	No known significant effects or critical hazards.
	RNA Isolation Chloroform, Isoamyl Alcohol	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
<input checked="" type="checkbox"/> Denaturing solution	
Oral	1058 mg/kg
Dermal	2327.7 mg/kg
Inhalation (dusts and mists)	3.174 mg/l
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	
Oral	102 mg/kg
Dermal	642.9 mg/kg
Inhalation (dusts and mists)	0.5102 mg/l
RNA Isolation Chloroform, Isoamyl Alcohol	
Oral	506.2 mg/kg
Inhalation (vapours)	7.397 mg/l

Other information	: <input checked="" type="checkbox"/> Mercaptoethanol	Not available.
	Isopropanol	Adverse symptoms may include the following: Repeated exposure may cause skin dryness or cracking.
	Denaturing solution	Not available.
	2M Sodium Acetate	Not available.
	RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid	Not available.
	RNA Isolation Chloroform, Isoamyl Alcohol	Adverse symptoms may include the following: Repeated exposure may cause skin dryness or cracking.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
<input checked="" type="checkbox"/> Isopropanol Propan-2-ol	Acute EC50 10100 mg/l Fresh water Acute LC50 1400000 µg/l Marine water Acute LC50 4200 mg/l Fresh water	Daphnia - Daphnia magna Crustaceans - Crangon crangon Fish - Rasbora heteromorpha	48 hours 48 hours 96 hours
2M Sodium Acetate acetic acid	Acute EC50 73400 µg/l Fresh water Acute EC50 65000 µg/l Fresh water Acute LC50 32 mg/l Marine water Acute LC50 75000 µg/l Fresh water	Algae - Navicula seminulum Daphnia - Daphnia magna - Neonate Crustaceans - Artemia salina Fish - Lepomis macrochirus	96 hours 48 hours 48 hours 96 hours
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic			

Section 12. Ecological information

Acid Phenol	Acute EC50 61.1 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours	
	Acute EC50 36 mg/l Marine water	Algae - Hormosira banksii - Gamete	72 hours	
	Acute EC50 94 mg/l Fresh water	Aquatic plants - Lemna aequinoctialis	96 hours	
	Acute EC50 4200 µg/l Fresh water	Daphnia - Daphnia magna	48 hours	
	Acute LC50 800 µg/l Marine water	Crustaceans - Archaeomysis kokuboi - Juvenile (Fledgling, Hatchling, Weanling)	48 hours	
	Acute LC50 1555 µg/l Fresh water	Fish - Cirrhinus mrigala - Larvae	96 hours	
	Chronic NOEC 16 µg/l Marine water	Algae - Hormosira banksii - Gamete	72 hours	
	Chronic NOEC 1.5 mg/l Fresh water	Daphnia - Daphnia magna	21 days	
	Chronic NOEC 118 µg/l Fresh water	Fish - Oncorhynchus mykiss	90 days	
	Acute EC50 >100 mg/l Fresh water	Algae	72 hours	
Succinic acid	Acute EC50 374200 µg/l Fresh water	Daphnia - Daphnia magna - Larvae	48 hours	
	Acute LC50 >100 mg/l Fresh water	Fish	96 hours	
	Acute NOEC 100 mg/l Fresh water	Algae	72 hours	
	Acute NOEC 23 mg/l Fresh water	Daphnia	48 hours	
	Acute NOEC 100 mg/l Fresh water	Fish	96 hours	
	RNA Isolation Chloroform, Isoamyl Alcohol Trichloromethane	Acute EC50 13.3 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
		Acute EC50 2.803 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
Acute LC50 29000 µg/l Fresh water		Daphnia - Daphnia magna	48 hours	
Acute LC50 13.3 ppm Fresh water		Fish - Lepomis macrochirus	96 hours	
Chronic EC10 3.61 mg/l Fresh water		Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours	
Chronic NOEC 1.8 mg/l Fresh water		Daphnia - Daphnia magna	21 days	

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
β-Mercaptoethanol β-Mercaptoethanol	OECD 310 Ready Biodegradability - CO2 in Sealed Vessels (Headspace Test)	69 % - Inherent - 60 days	20 mg/l	-
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid Succinic acid	OECD 301E Ready Biodegradability - Modified OECD Screening Test	96.55 % - Readily - 28 days	-	-

Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Isopropanol Propan-2-ol	-	-	Readily
2M Sodium Acetate acetic acid	-	-	Readily
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid Succinic acid	-	-	Readily
RNA Isolation Chloroform, Isoamyl Alcohol Trichloromethane	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
β-Mercaptoethanol β-Mercaptoethanol	-0.056	-	low
Isopropanol Propan-2-ol	0.05	-	low
2M Sodium Acetate acetic acid	-0.17	3.16	low
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid Phenol Succinic acid	1.47 -0.59	647 -	high low
RNA Isolation Chloroform, Isoamyl Alcohol Trichloromethane 3-Methylbutan-1-ol	1.97 1.35	690 -	high low

Mobility in soil

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

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

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned

Section 13. Disposal considerations

thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	ADG	IMDG	IATA
UN number	UN3316	UN3316	UN3316
UN proper shipping name	CHEMICAL KIT	CHEMICAL KIT	☑ Chemical kit
Transport hazard class(es)	9 	9  	9 
Packing group	II	II	II
Environmental hazards	Yes. The environmentally hazardous substance mark is not required.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Additional information

- ADG** : ☑ **Hazchem code** 2Z
Special provisions 251, 340
- IMDG** : ☑ The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Emergency schedules F-A, _S-P_
Special provisions 251, 340
- IATA** : ☑ The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: 10 kg. Packaging instructions: 960. Cargo Aircraft Only: 10 kg. Packaging instructions: 960. Limited Quantities - Passenger Aircraft: 1 kg. Packaging instructions: Y960.
Special provisions A44, A163
- Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of Marpol and the IBC Code : Not available.

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

6

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

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

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Section 15. Regulatory information

[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 (ENCS) : All components are listed or exempted. Japan inventory (ISHL) : All components are listed or exempted.
Malaysia	: Not determined.
New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Republic of Korea	: Not determined.
Taiwan	: All components are listed or exempted.
Thailand	: <input checked="" type="checkbox"/> Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: <input checked="" type="checkbox"/> Not determined.

Section 16. Any other relevant information

[History](#)

Date of issue/Date of revision	: 29/06/2018
Date of previous issue	: 31/08/2016
Version	: 6

[Key to abbreviations](#)

: ADG = Australian Dangerous Goods
: ATE = Acute Toxicity Estimate
: BCF = Bioconcentration Factor
: GHS = Globally Harmonized System of Classification and Labelling of Chemicals
: IATA = International Air Transport Association
: IBC = Intermediate Bulk Container
: IMDG = International Maritime Dangerous Goods
: LogPow = logarithm of the octanol/water partition coefficient
: MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
: NOHSC = National Occupational Health and Safety Commission
: SUSMP = Standard Uniform Schedule of Medicine and Poisons
: UN = United Nations

[Procedure used to derive the classification](#)

Classification	Justification
<input checked="" type="checkbox"/>-Mercaptoethanol Flam. Liq. 4, H227 Acute Tox. 3, H301 Acute Tox. 2, H310 Acute Tox. 2, H330 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335 Aquatic Chronic 2, H411	On basis of test data On basis of test data On basis of test data On basis of test data Expert judgment Expert judgment Expert judgment Expert judgment Expert judgment

Section 16. Any other relevant information

Isopropanol Flam. Liq. 2, H225 Eye Irrit. 2A, H319 STOT SE 3, H336	On basis of test data Calculation method Calculation method
Denaturing solution Acute Tox. 4, H302 Acute Tox. 4, H332 Aquatic Chronic 3, H412	Calculation method Calculation method Calculation method
2M Sodium Acetate Skin Irrit. 2, H315 Eye Irrit. 2A, H319	Expert judgment Expert judgment
RNA Phenol pH 5.3 - 5.7 Equilibrated with Succinic Acid Flam. Liq. 4, H227 Acute Tox. 3, H301 Acute Tox. 3, H311 Acute Tox. 3, H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 Muta. 2, H341 STOT RE 2, H373	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method
RNA Isolation Chloroform, Isoamyl Alcohol Acute Tox. 4, H302 Acute Tox. 3, H331 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Carc. 2, H351 Repr. 2, H361 (Unborn child) STOT RE 1, H372	Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method

References : Not available.

✔ Indicates information that has changed from previously issued version.

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