Conforms to Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals

SAFETY DATA SHEET

Agilent Technologies

Micro RNA Isolation Kit, Part Number 200344-1

Section 1. Identification

Product identifier : Micro RNA Isolation Kit, Part Number 200344-1

Part no. (chemical kit) : 200344-1

Part no. :

ß-Mercaptoethanol	200345-21
Micro RNA Isolation Kit Isopropanol	200344-17
Chloroform: Isoamyl Alcohol	200344-15
Micro RNA Isolation Kit Denaturing Solution	200344-16
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	200344-18
2M Sodium Acetate pH 4.0	200344-19

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

Material uses : Analytical reagent.

ß-Mercaptoethanol	0.75 ml (750 µl	14.33 M)
Micro RNA Isolation Kit Isopropanol	50 ml	
Chloroform: Isoamyl Alcohol	10 ml	
Micro RNA Isolation Kit Denaturing Solution	50 ml	
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	50 ml	
2M Sodium Acetate pH 4.0	5 ml	

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

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

Section 2. Hazard(s) identification

Classification of the substance or mixture

ß-Mercaptoethanol

H227	FLAMMABLE LIQUIDS - Category 4
H301	ACUTE TOXICITY (oral) - Category 3
H310	ACUTE TOXICITY (dermal) - Category 2
H331	ACUTE TOXICITY (inhalation) - Category 3
H315	SKIN CORROSION/IRRITATION - Category 2
H318	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
H317	SKIN SENSITISATION - Category 1A
H361	REPRODUCTIVE TOXICITY - Category 2
H335	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3
H373	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2
H400	SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1
H411	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2

Micro RNA Isolation Kit Isopropanol

H225	FLAMMABLE LIQUIDS - Category 2
H319	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A

Section 2. Hazard(s) identification

H336	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3

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
H373	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2
H412	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3

Micro RNA Isolation Kit Denaturing Solution

H302	ACUTE TOXICITY (oral) - Category 4
H332	ACUTE TOXICITY (inhalation) - Category 4
H412	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3

Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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
H411	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2

Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 1 - 10% Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 1 - 10%
Chloroform: Isoamyl Alcohol	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 2%

GHS label elements

Section 2. Hazard(s) identification

Hazard pictograms :

ß-Mercaptoethanol

Micro RNA Isolation Kit Isopropanol

Chloroform: Isoamyl Alcohol

Micro RNA Isolation Kit Denaturing Solution

Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid

Signal word :

ß-Mercaptoethanol	DANGER
Micro RNA Isolation Kit Isopropanol	DANGER
Chloroform: Isoamyl Alcohol	DANGER
Micro RNA Isolation Kit Denaturing Solution	WARNING
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	DANGER
2M Sodium Acetate pH 4.0	No signal word.

Hazard statements :

ß-Mercaptoethanol

H227 - Combustible liquid.
H301 + H331 - Toxic if swallowed or if inhaled.
H310 - Fatal in contact with skin.
H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H318 - Causes serious eye damage.
H335 - May cause respiratory irritation.
H361 - Suspected of damaging fertility or the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure. (heart, liver) (oral)
H400 - Very toxic to aquatic life.
H411 - Toxic to aquatic life with long lasting effects.

Micro RNA Isolation Kit Isopropanol

H225 - Highly flammable liquid and vapour.
H319 - Causes serious eye irritation.
H336 - May cause drowsiness or dizziness.

Chloroform: Isoamyl Alcohol

H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H331 - Toxic if inhaled.
H351 - Suspected of causing cancer.
H373 - May cause damage to organs through prolonged or repeated exposure.
H412 - Harmful to aquatic life with long lasting effects.

Micro RNA Isolation Kit Denaturing Solution

H302 + H332 - Harmful if swallowed or if inhaled.
H412 - Harmful to aquatic life with long lasting effects.

Section 2. Hazard(s) identification

	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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. H411 - Toxic to aquatic life with long lasting effects.
	2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.

Precautionary statements

Prevention :	β-Mercaptoethanol	P281 - Use personal protective equipment as required. P280 - Wear protective gloves and protective clothing. Wear eye or face protection. P210 - Keep away from flames and hot surfaces. No smoking.
	Micro RNA Isolation Kit Isopropanol	P280 - 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 or lighting equipment.
	Chloroform: Isoamyl Alcohol	P201 - Obtain special instructions before use. P281 - Use personal protective equipment as required. P280 - Wear protective gloves. Wear eye or face protection. P260 - Do not breathe vapour.
	Micro RNA Isolation Kit Denaturing Solution	P273 - Avoid release to the environment. P261 - Avoid breathing vapour. P270 - Do not eat, drink or smoke when using this product. P264 - Wash thoroughly after handling.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	P281 - Use personal protective equipment as required. P280 - Wear protective gloves, protective clothing and eye or face protection. P210 - Keep away from flames and hot surfaces. No smoking.
	2M Sodium Acetate pH 4.0	Not applicable.
Response :	β-Mercaptoethanol	P391 - Collect spillage.
	Micro RNA Isolation Kit Isopropanol	P304 + P312 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell.
	Chloroform: Isoamyl Alcohol	P314 - Get medical advice/attention if you feel unwell.
	Micro RNA Isolation Kit Denaturing Solution	P304 + P312 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	P391 - Collect spillage.
	2M Sodium Acetate pH 4.0	Not applicable.
Storage :	β-Mercaptoethanol	P403 + P235 - Store in a well-ventilated place. Keep cool.
	Micro RNA Isolation Kit Isopropanol	P403 + P235 - Store in a well-ventilated place. Keep cool.
	Chloroform: Isoamyl Alcohol	Not applicable.
	Micro RNA Isolation Kit Denaturing Solution	Not applicable.
	Phenol pH 5.3 - 5.7	P403 + P235 - Store in a well-ventilated place. Keep

Section 2. Hazard(s) identification

	Equilibrated with 0.1 M Succinic Acid	cool.
	2M Sodium Acetate pH 4.0	Not applicable.
Disposal :	ß-Mercaptoethanol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	Micro RNA Isolation Kit Isopropanol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	Chloroform: Isoamyl Alcohol	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	Micro RNA Isolation Kit Denaturing Solution	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	2M Sodium Acetate pH 4.0	Not applicable.

Supplemental label elements

Additional warning phrases :	ß-Mercaptoethanol	Not applicable.
	Micro RNA Isolation Kit Isopropanol	Not applicable.
	Chloroform: Isoamyl Alcohol	Not applicable.
	Micro RNA Isolation Kit Denaturing Solution	Not applicable.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not applicable.
	2M Sodium Acetate pH 4.0	Not applicable.

Other hazards which do not result in classification :	ß-Mercaptoethanol	None known.
	Micro RNA Isolation Kit Isopropanol	None known.
	Chloroform: Isoamyl Alcohol	None known.
	Micro RNA Isolation Kit Denaturing Solution	Causes digestive tract burns.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Causes digestive tract burns.
	2M Sodium Acetate pH 4.0	None known.

Section 3. Composition and ingredient information

Substance/mixture :	ß-Mercaptoethanol	Substance
	Micro RNA Isolation Kit Isopropanol	Substance
	Chloroform: Isoamyl Alcohol	Mixture
	Micro RNA Isolation Kit Denaturing Solution	Mixture
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Mixture
	2M Sodium Acetate pH 4.0	Mixture

CAS number/other identifiers

Section 3. Composition and ingredient information

Ingredient name	% (w/w)	CAS number
ß-Mercaptoethanol		
ß-Mercaptoethanol	100	60-24-2
Micro RNA Isolation Kit Isopropanol		
Propan-2-ol	100	67-63-0
Chloroform: Isoamyl Alcohol		
Trichloromethane	≥90	67-66-3
3-Methylbutan-1-ol	≤3	123-51-3
Micro RNA Isolation Kit Denaturing Solution		
Guanidinium thiocyanate	≥30 - <55	593-84-0
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid		
Phenol	≥90	108-95-2
Succinic acid	≤3	110-15-6
2M Sodium Acetate pH 4.0		
acetic acid	≥10 - ≤30	64-19-7

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 :

ß-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.
Micro RNA Isolation Kit 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.
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.
Micro RNA Isolation Kit 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.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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.
2M Sodium Acetate pH 4.0	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Section 4. First aid measures

Inhalation	:	ß-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, belt or waistband.
		Micro RNA Isolation Kit Isopropanol	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.
		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 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.
		Micro RNA Isolation Kit 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.

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		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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.
		2M Sodium Acetate pH 4.0	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Skin contact	:	ß-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.
		Micro RNA Isolation Kit 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.
		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.
		Micro RNA Isolation Kit 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.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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.
		2M Sodium Acetate pH 4.0	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion	:	ß-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

Section 4. First aid measures

	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.
Micro RNA Isolation Kit Isopropanol	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.
Chloroform: Isoamyl Alcohol	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.
Micro RNA Isolation Kit 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.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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

Section 4. First aid measures

		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 immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	2M Sodium Acetate pH 4.0	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	:	ß-Mercaptoethanol	Causes serious eye damage.
		Micro RNA Isolation Kit Isopropanol	Causes serious eye irritation.
		Chloroform: Isoamyl Alcohol	Causes serious eye irritation.
		Micro RNA Isolation Kit Denaturing Solution	No known significant effects or critical hazards.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Causes serious eye damage.
		2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.
Inhalation	:	ß-Mercaptoethanol	Toxic if inhaled. May cause respiratory irritation.
		Micro RNA Isolation Kit Isopropanol	Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
		Chloroform: Isoamyl Alcohol	Toxic if inhaled.
		Micro RNA Isolation Kit Denaturing Solution	Harmful if inhaled.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Toxic if inhaled.
		2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.
Skin contact	:	ß-Mercaptoethanol	Fatal in contact with skin. Causes skin irritation. May cause an allergic skin reaction.
		Micro RNA Isolation Kit Isopropanol	No known significant effects or critical hazards.
		Chloroform: Isoamyl Alcohol	Causes skin irritation.
		Micro RNA Isolation Kit Denaturing Solution	No known significant effects or critical hazards.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Causes severe burns. Toxic in contact with skin.
		2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.
Ingestion	:	ß-Mercaptoethanol	Toxic if swallowed.
		Micro RNA Isolation Kit Isopropanol	Can cause central nervous system (CNS) depression.
		Chloroform: Isoamyl Alcohol	Harmful if swallowed.
		Micro RNA Isolation Kit Denaturing Solution	Harmful if swallowed. Corrosive to the digestive tract. Causes burns.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Toxic if swallowed. Corrosive to the digestive tract. Causes burns.
		2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Section 4. First aid measures

Eye contact :

ß-Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
Micro RNA Isolation Kit Isopropanol	Adverse symptoms may include the following: pain or irritation watering redness
Chloroform: Isoamyl Alcohol	Adverse symptoms may include the following: pain or irritation watering redness
Micro RNA Isolation Kit Denaturing Solution	No specific data.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Adverse symptoms may include the following: pain watering redness
2M Sodium Acetate pH 4.0	No specific data.

Inhalation :

ß-Mercaptoethanol	Adverse symptoms may include the following: respiratory tract irritation coughing reduced foetal weight increase in foetal deaths skeletal malformations
Micro RNA Isolation Kit Isopropanol	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
Chloroform: Isoamyl Alcohol	No specific data.
Micro RNA Isolation Kit Denaturing Solution	No specific data.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	No specific data.
2M Sodium Acetate pH 4.0	No specific data.

Skin contact :

ß-Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced foetal weight increase in foetal deaths skeletal malformations
Micro RNA Isolation Kit Isopropanol	No specific data.
Chloroform: Isoamyl Alcohol	Adverse symptoms may include the following: irritation redness
Micro RNA Isolation Kit Denaturing Solution	No specific data.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Adverse symptoms may include the following: pain or irritation redness blistering may occur

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	2M Sodium Acetate pH 4.0	No specific data.
Ingestion :	ß-Mercaptoethanol	Adverse symptoms may include the following: stomach pains reduced foetal weight increase in foetal deaths skeletal malformations
	Micro RNA Isolation Kit Isopropanol	No specific data.
	Chloroform: Isoamyl Alcohol	No specific data.
	Micro RNA Isolation Kit Denaturing Solution	Adverse symptoms may include the following: stomach pains
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Adverse symptoms may include the following: stomach pains
	2M Sodium Acetate pH 4.0	No specific data.

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

Notes to physician :	ß-Mercaptoethanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Micro RNA Isolation Kit Isopropanol	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Chloroform: Isoamyl Alcohol	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.
	Micro RNA Isolation Kit 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.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	2M Sodium Acetate pH 4.0	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments :	ß-Mercaptoethanol	No specific treatment.
	Micro RNA Isolation Kit Isopropanol	No specific treatment.
	Chloroform: Isoamyl Alcohol	No specific treatment.
	Micro RNA Isolation Kit Denaturing Solution	No specific treatment.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	No specific treatment.
	2M Sodium Acetate pH 4.0	No specific treatment.
Protection of first-aiders :	ß-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.
	Micro RNA Isolation Kit 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

Section 4. First aid measures

	providing aid to give mouth-to-mouth resuscitation.
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.
Micro RNA Isolation Kit 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.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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.
2M Sodium Acetate pH 4.0	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media

ß-Mercaptoethanol	Use dry chemical, CO_2, water spray (fog) or foam.
Micro RNA Isolation Kit Isopropanol	Use dry chemical, CO_2, water spray (fog) or foam.
Chloroform: Isoamyl Alcohol	Use an extinguishing agent suitable for the surrounding fire.
Micro RNA Isolation Kit Denaturing Solution	Use an extinguishing agent suitable for the surrounding fire.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Use dry chemical, CO_2, water spray (fog) or foam.
2M Sodium Acetate pH 4.0	Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media

ß-Mercaptoethanol	Do not use water jet.
Micro RNA Isolation Kit Isopropanol	Do not use water jet.
Chloroform: Isoamyl Alcohol	None known.
Micro RNA Isolation Kit Denaturing Solution	None known.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Do not use water jet.
2M Sodium Acetate pH 4.0	None known.

Specific hazards arising from the chemical

: ß-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 very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this

Section 5. Firefighting measures

		material must be contained and prevented from being discharged to any waterway, sewer or drain.
	Micro RNA Isolation Kit Isopropanol	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.
	Chloroform: Isoamyl Alcohol	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.
	Micro RNA Isolation Kit 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.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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. 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 drain.
	2M Sodium Acetate pH 4.0	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products :	ß-Mercaptoethanol	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
	Micro RNA Isolation Kit Isopropanol	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	Chloroform: Isoamyl Alcohol	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds carbonyl halides
	Micro RNA Isolation Kit Denaturing Solution	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	2M Sodium Acetate pH 4.0	Decomposition products may include the following materials: carbon dioxide carbon monoxide metal oxide/oxides

Section 5. Firefighting measures

Special protective actions for fire-fighters :	ß-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.
	Micro RNA Isolation Kit Isopropanol	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.
	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.
	Micro RNA Isolation Kit 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.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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.
	2M Sodium Acetate pH 4.0	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 :	ß-Mercaptoethanol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Micro RNA Isolation Kit Isopropanol	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	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.
	Micro RNA Isolation Kit 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.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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.
	2M Sodium Acetate pH 4.0	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 :	ß-Mercaptoethanol	2X
	Micro RNA Isolation Kit Isopropanol	2YE
	Chloroform: Isoamyl Alcohol	2Z
	Micro RNA Isolation Kit Denaturing Solution	Not available.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M	2X

Section 5. Firefighting measures

Succinic Acid	
2M Sodium Acetate pH 4.0	Not available.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	ß-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.
		Micro RNA Isolation Kit 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.
		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.
		Micro RNA Isolation Kit 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.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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.
		2M Sodium Acetate pH 4.0	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders :	ß-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".
	Micro RNA Isolation Kit 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 information in "For non-emergency personnel".
	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".
	Micro RNA Isolation Kit Denaturing Solution	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".
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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".
	2M Sodium Acetate pH 4.0	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 :	ß-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.
	Micro RNA Isolation Kit 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).
	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). Water polluting material. May be harmful to the environment if released in large quantities.
	Micro RNA Isolation Kit 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.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.
	2M Sodium Acetate pH 4.0	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).

Section 6. Accidental release measures

Methods and material for containment and cleaning up

Methods for cleaning up :

ß-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.
Micro RNA Isolation Kit Isopropanol	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.
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.
Micro RNA Isolation Kit 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.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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.
2M Sodium Acetate pH 4.0	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 :

ß-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. 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. 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

Section 7. Handling and storage

	non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.
Micro RNA Isolation Kit 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-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.
Chloroform: Isoamyl Alcohol	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. 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.
Micro RNA Isolation Kit Denaturing Solution	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.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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. 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.
2M Sodium Acetate pH 4.0	Put on appropriate personal protective equipment (see Section 8).

Section 7. Handling and storage

Advice on general occupational hygiene :

ß-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.

Micro RNA Isolation Kit Isopropanol
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.

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.

Micro RNA Isolation Kit Denaturing Solution
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.

Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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.

2M Sodium Acetate pH 4.0
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 :

ß-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 oxidising 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.

Micro RNA Isolation Kit 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 oxidising materials. Keep container tightly

Section 7. Handling and storage

	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.
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.
Micro RNA Isolation Kit Denaturing Solution	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.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M 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 oxidising 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.
2M Sodium Acetate pH 4.0	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.

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

Section 8. Exposure controls and personal protection

Ingredient name	Exposure limits
Micro RNA Isolation Kit Isopropanol	
Propan-2-ol	**Safe Work Australia (Australia, 12/2019).** STEL: 1230 mg/m³ 15 minutes. STEL: 500 ppm 15 minutes. TWA: 983 mg/m³ 8 hours. TWA: 400 ppm 8 hours.
Chloroform: Isoamyl Alcohol	
Trichloromethane	**Safe Work Australia (Australia, 12/2019).** **Absorbed through skin.** TWA: 10 mg/m³ 8 hours. TWA: 2 ppm 8 hours.
3-Methylbutan-1-ol	**Safe Work Australia (Australia, 12/2019).** STEL: 452 mg/m³ 15 minutes. STEL: 125 ppm 15 minutes. TWA: 361 mg/m³ 8 hours. TWA: 100 ppm 8 hours.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	
Phenol	**Safe Work Australia (Australia, 12/2019).** **Absorbed through skin.** TWA: 4 mg/m³ 8 hours. TWA: 1 ppm 8 hours.
Succinic acid	**DFG MAC-values list (Germany, 7/2019).** PEAK: 4 mg/m³, 4 times per shift, 15 minutes. Form: Inhalable fraction TWA: 2 mg/m³ 8 hours. Form: Inhalable fraction
2M Sodium Acetate pH 4.0	
acetic acid	**Safe Work Australia (Australia, 12/2019).** STEL: 37 mg/m³ 15 minutes. STEL: 15 ppm 15 minutes. TWA: 25 mg/m³ 8 hours. TWA: 10 ppm 8 hours.

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.

Section 8. Exposure controls and personal protection

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

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 :

ß-Mercaptoethanol	Liquid.
Micro RNA Isolation Kit Isopropanol	Liquid.
Chloroform: Isoamyl Alcohol	Liquid.
Micro RNA Isolation Kit Denaturing Solution	Liquid.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Liquid.
2M Sodium Acetate pH 4.0	Liquid.

Colour :

ß-Mercaptoethanol	Colourless.
Micro RNA Isolation Kit Isopropanol	Colourless.
Chloroform: Isoamyl Alcohol	Not available.
Micro RNA Isolation Kit Denaturing Solution	Not available.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
2M Sodium Acetate pH 4.0	Not available.

Odour :

ß-Mercaptoethanol	Characteristic.
Micro RNA Isolation Kit Isopropanol	Alcohol-like.
Chloroform: Isoamyl Alcohol	Not available.
Micro RNA Isolation Kit Denaturing Solution	Not available.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
2M Sodium Acetate pH 4.0	Not available.

Section 9. Physical and chemical properties

Odour threshold	:	ß-Mercaptoethanol	Not available.
		Micro RNA Isolation Kit Isopropanol	Not available.
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
		2M Sodium Acetate pH 4.0	Not available.
pH	:	ß-Mercaptoethanol	Not available.
		Micro RNA Isolation Kit Isopropanol	Not available.
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	5.3 to 5.7
		2M Sodium Acetate pH 4.0	4
Melting point	:	ß-Mercaptoethanol	-100°C (-148°F)
		Micro RNA Isolation Kit Isopropanol	-88.9°C (-128°F)
		Chloroform: Isoamyl Alcohol	-63.5°C (-82.3°F)
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	40.85°C (105.5°F)
		2M Sodium Acetate pH 4.0	Not available.
Boiling point	:	ß-Mercaptoethanol	157°C (314.6°F)
		Micro RNA Isolation Kit Isopropanol	82.5°C (180.5°F)
		Chloroform: Isoamyl Alcohol	61.17°C (142.1°F)
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	181.75°C (359.2°F)
		2M Sodium Acetate pH 4.0	Not available.
Flash point	:	ß-Mercaptoethanol	Closed cup: 74°C (165.2°F) Open cup: 74°C (165.2°F)
		Micro RNA Isolation Kit Isopropanol	Closed cup: 11.7°C (53.1°F) Open cup: 11.85°C (53.3°F) [Tagliabue.]
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Closed cup: 61 to 93.3°C (141.8 to 199.9°F)
		2M Sodium Acetate pH 4.0	Not available.
Evaporation rate	:	ß-Mercaptoethanol	Not available.
		Micro RNA Isolation Kit Isopropanol	1.7 (butyl acetate = 1)
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
		2M Sodium Acetate pH 4.0	Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas)	:	ß-Mercaptoethanol	Not applicable.
		Micro RNA Isolation Kit Isopropanol	Not applicable.
		Chloroform: Isoamyl Alcohol	Not applicable.
		Micro RNA Isolation Kit Denaturing Solution	Not applicable.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not applicable.
		2M Sodium Acetate pH 4.0	Not applicable.
Lower and upper explosive (flammable) limits	:	ß-Mercaptoethanol	Lower: 2.3% Upper: 18%
		Micro RNA Isolation Kit Isopropanol	Lower: 2% Upper: 12%
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
		2M Sodium Acetate pH 4.0	Not available.
Vapour pressure	:	ß-Mercaptoethanol	0.13 kPa (0.98 mm Hg) [room temperature]
		Micro RNA Isolation Kit Isopropanol	4.4 kPa (33 mm Hg) [room temperature]
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
		2M Sodium Acetate pH 4.0	Not available.
Vapour density	:	ß-Mercaptoethanol	2.7 [Air = 1]
		Micro RNA Isolation Kit Isopropanol	2.07 [Air = 1]
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
		2M Sodium Acetate pH 4.0	Not available.
Relative density	:	ß-Mercaptoethanol	1.1
		Micro RNA Isolation Kit Isopropanol	0.785
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
		2M Sodium Acetate pH 4.0	Not available.
Solubility	:	ß-Mercaptoethanol	Easily soluble in the following materials: cold water and hot water.
		Micro RNA Isolation Kit Isopropanol	Easily soluble in the following materials: cold water and hot water.
		Chloroform: Isoamyl Alcohol	Partially soluble in the following materials: cold water and hot water.
		Micro RNA Isolation Kit Denaturing Solution	Soluble in the following materials: cold water and hot water.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M	Soluble in the following materials: cold water and hot water.

Section 9. Physical and chemical properties

		Succinic Acid 2M Sodium Acetate pH 4.0	Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	:	ß-Mercaptoethanol	-0.056
		Micro RNA Isolation Kit Isopropanol	Not available.
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	1.48
		2M Sodium Acetate pH 4.0	Not available.
Auto-ignition temperature	:	ß-Mercaptoethanol	295°C (563°F)
		Micro RNA Isolation Kit Isopropanol	399°C (750.2°F)
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
		2M Sodium Acetate pH 4.0	Not available.
Decomposition temperature	:	ß-Mercaptoethanol	Not available.
		Micro RNA Isolation Kit Isopropanol	Not available.
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
		2M Sodium Acetate pH 4.0	Not available.
Viscosity	:	ß-Mercaptoethanol	Dynamic (room temperature): 3.43 mPa·s (3.43 cP)
		Micro RNA Isolation Kit Isopropanol	Not available.
		Chloroform: Isoamyl Alcohol	Not available.
		Micro RNA Isolation Kit Denaturing Solution	Not available.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Not available.
		2M Sodium Acetate pH 4.0	Not available.

Section 10. Stability and reactivity

Reactivity	:	ß-Mercaptoethanol	No specific test data related to reactivity available for this product or its ingredients.
		Micro RNA Isolation Kit Isopropanol	No specific test data related to reactivity available for this product or its ingredients.
		Chloroform: Isoamyl Alcohol	No specific test data related to reactivity available for this product or its ingredients.
		Micro RNA Isolation Kit Denaturing Solution	No specific test data related to reactivity available for this product or its ingredients.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	No specific test data related to reactivity available for this product or its ingredients.
		2M Sodium Acetate pH 4.0	No specific test data related to reactivity available for this product or its ingredients.

Section 10. Stability and reactivity

Chemical stability	: ß-Mercaptoethanol	The product is stable.
	Micro RNA Isolation Kit Isopropanol	The product is stable.
	Chloroform: Isoamyl Alcohol	The product is stable.
	Micro RNA Isolation Kit Denaturing Solution	The product is stable.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	The product is stable.
	2M Sodium Acetate pH 4.0	The product is stable.
Possibility of hazardous reactions	: ß-Mercaptoethanol	Under normal conditions of storage and use, hazardous reactions will not occur.
	Micro RNA Isolation Kit Isopropanol	Under normal conditions of storage and use, hazardous reactions will not occur.
	Chloroform: Isoamyl Alcohol	Under normal conditions of storage and use, hazardous reactions will not occur.
	Micro RNA Isolation Kit Denaturing Solution	Under normal conditions of storage and use, hazardous reactions will not occur.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Under normal conditions of storage and use, hazardous reactions will not occur.
	2M Sodium Acetate pH 4.0	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: ß-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.
	Micro RNA Isolation Kit 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.
	Chloroform: Isoamyl Alcohol	No specific data.
	Micro RNA Isolation Kit Denaturing Solution	No specific data.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	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.
	2M Sodium Acetate pH 4.0	No specific data.
Incompatible materials	: ß-Mercaptoethanol	Reactive or incompatible with the following materials: oxidising materials
	Micro RNA Isolation Kit Isopropanol	Reactive or incompatible with the following materials: oxidising materials
	Chloroform: Isoamyl Alcohol	May react or be incompatible with oxidising materials.
	Micro RNA Isolation Kit Denaturing Solution	May react or be incompatible with oxidising materials.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Reactive or incompatible with the following materials: oxidising materials
	2M Sodium Acetate pH 4.0	May react or be incompatible with oxidising materials.

Section 10. Stability and reactivity

Hazardous decomposition products	:	ß-Mercaptoethanol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		Micro RNA Isolation Kit Isopropanol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		Chloroform: Isoamyl Alcohol	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		Micro RNA Isolation Kit Denaturing Solution	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
		2M Sodium Acetate pH 4.0	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
ß-Mercaptoethanol				
ß-Mercaptoethanol	LD50 Oral	Rat	244 mg/kg	-
Micro RNA Isolation Kit Isopropanol				
Propan-2-ol	LD50 Dermal	Rabbit	12800 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
Chloroform: Isoamyl Alcohol				
Trichloromethane	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Oral	Rat	300 mg/kg	-
3-Methylbutan-1-ol	LD50 Oral	Rat	1300 mg/kg	-
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid				
Phenol	LC50 Inhalation Dusts and mists	Rat	316 mg/m³	4 hours
	LD50 Dermal	Rabbit	630 mg/kg	-
	LD50 Dermal	Rat	669 mg/kg	-
	LD50 Oral	Rat	317 mg/kg	-
Succinic acid	LD50 Oral	Rat	2260 mg/kg	-
2M Sodium Acetate pH 4.0				
acetic acid	LC50 Inhalation Vapour	Rat	11000 mg/m³	4 hours
	LD50 Dermal	Rabbit	1060 mg/kg	-
	LD50 Oral	Rat	3310 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
ß-Mercaptoethanol					
ß-Mercaptoethanol	Eyes - Severe irritant	Rabbit	-	2 mg	-
Micro RNA Isolation Kit Isopropanol					
Propan-2-ol	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Moderate irritant	Rabbit	-	10 mg	-
	Skin - Mild irritant	Rabbit	-	500 mg	-
Chloroform: Isoamyl Alcohol					
Trichloromethane	Eyes - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
3-Methylbutan-1-ol	Eyes - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid					
Phenol	Eyes - Severe irritant	Rabbit	-	5 mg	-
	Skin - Severe irritant	Rabbit	-	535 mg	-
Succinic acid	Eyes - Severe irritant	Rabbit	-	750 ug	-
2M Sodium Acetate pH 4.0					
acetic acid	Skin - Severe irritant	Rabbit	-	525 mg	-

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
ß-Mercaptoethanol			
ß-Mercaptoethanol	Category 3	-	Respiratory tract irritation
Micro RNA Isolation Kit Isopropanol			
Propan-2-ol	Category 3	-	Narcotic effects
Chloroform: Isoamyl Alcohol			
3-Methylbutan-1-ol	Category 3	-	Respiratory tract irritation
	Category 3		Narcotic effects

Specific target organ toxicity (repeated exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
ß-Mercaptoethanol			
ß-Mercaptoethanol	Category 2	oral	heart, liver
Chloroform: Isoamyl Alcohol			
Trichloromethane	Category 2	-	-
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid			
Phenol	Category 2	-	-

Aspiration hazard

Not available.

Information on likely routes of exposure

ß-Mercaptoethanol	Routes of entry anticipated: Oral, Dermal, Inhalation.
Micro RNA Isolation Kit Isopropanol	Routes of entry anticipated: Oral, Dermal, Inhalation.
Chloroform: Isoamyl Alcohol	Routes of entry anticipated: Oral, Dermal, Inhalation.
Micro RNA Isolation Kit Denaturing Solution	Routes of entry anticipated: Oral, Dermal, Inhalation.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Routes of entry anticipated: Oral, Dermal, Inhalation.
2M Sodium Acetate pH 4.0	Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact

ß-Mercaptoethanol	Causes serious eye damage.
Micro RNA Isolation Kit Isopropanol	Causes serious eye irritation.
Chloroform: Isoamyl Alcohol	Causes serious eye irritation.
Micro RNA Isolation Kit Denaturing Solution	No known significant effects or critical hazards.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Causes serious eye damage.
2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.

Inhalation

ß-Mercaptoethanol	Toxic if inhaled. May cause respiratory irritation.
Micro RNA Isolation Kit Isopropanol	Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
Chloroform: Isoamyl Alcohol	Toxic if inhaled.
Micro RNA Isolation Kit Denaturing Solution	Harmful if inhaled.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Toxic if inhaled.
2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.

Skin contact

ß-Mercaptoethanol	Fatal in contact with skin. Causes skin irritation. May cause an allergic skin reaction.
Micro RNA Isolation Kit Isopropanol	No known significant effects or critical hazards.
Chloroform: Isoamyl Alcohol	Causes skin irritation.
Micro RNA Isolation Kit Denaturing Solution	No known significant effects or critical hazards.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Causes severe burns. Toxic in contact with skin.
2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.

Section 11. Toxicological information

Ingestion	: ß-Mercaptoethanol	Toxic if swallowed.
	Micro RNA Isolation Kit Isopropanol	Can cause central nervous system (CNS) depression.
	Chloroform: Isoamyl Alcohol	Harmful if swallowed.
	Micro RNA Isolation Kit Denaturing Solution	Harmful if swallowed. Corrosive to the digestive tract. Causes burns.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Toxic if swallowed. Corrosive to the digestive tract. Causes burns.
	2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: ß-Mercaptoethanol	Adverse symptoms may include the following: pain watering redness
	Micro RNA Isolation Kit Isopropanol	Adverse symptoms may include the following: pain or irritation watering redness
	Chloroform: Isoamyl Alcohol	Adverse symptoms may include the following: pain or irritation watering redness
	Micro RNA Isolation Kit Denaturing Solution	No specific data.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Adverse symptoms may include the following: pain watering redness
	2M Sodium Acetate pH 4.0	No specific data.
Inhalation	: ß-Mercaptoethanol	Adverse symptoms may include the following: respiratory tract irritation coughing reduced foetal weight increase in foetal deaths skeletal malformations
	Micro RNA Isolation Kit Isopropanol	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
	Chloroform: Isoamyl Alcohol	No specific data.
	Micro RNA Isolation Kit Denaturing Solution	No specific data.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	No specific data.
	2M Sodium Acetate pH 4.0	No specific data.
Skin contact	: ß-Mercaptoethanol	Adverse symptoms may include the following: pain or irritation redness blistering may occur reduced foetal weight increase in foetal deaths skeletal malformations

Section 11. Toxicological information

	Micro RNA Isolation Kit Isopropanol	No specific data.
	Chloroform: Isoamyl Alcohol	Adverse symptoms may include the following: irritation redness
	Micro RNA Isolation Kit Denaturing Solution	No specific data.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Adverse symptoms may include the following: pain or irritation redness blistering may occur
	2M Sodium Acetate pH 4.0	No specific data.
Ingestion :	β-Mercaptoethanol	Adverse symptoms may include the following: stomach pains reduced foetal weight increase in foetal deaths skeletal malformations
	Micro RNA Isolation Kit Isopropanol	No specific data.
	Chloroform: Isoamyl Alcohol	No specific data.
	Micro RNA Isolation Kit Denaturing Solution	Adverse symptoms may include the following: stomach pains
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Adverse symptoms may include the following: stomach pains
	2M Sodium Acetate pH 4.0	No specific data.

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General :	β-Mercaptoethanol	May cause damage to organs through prolonged or repeated exposure if swallowed. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
	Micro RNA Isolation Kit Isopropanol	No known significant effects or critical hazards.
	Chloroform: Isoamyl Alcohol	May cause damage to organs through prolonged or repeated exposure.
	Micro RNA Isolation Kit Denaturing Solution	No known significant effects or critical hazards.
	Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	May cause damage to organs through prolonged or repeated exposure.
	2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.

Section 11. Toxicological information

Carcinogenicity	:	ß-Mercaptoethanol	No known significant effects or critical hazards.
		Micro RNA Isolation Kit Isopropanol	No known significant effects or critical hazards.
		Chloroform: Isoamyl Alcohol	Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
		Micro RNA Isolation Kit Denaturing Solution	No known significant effects or critical hazards.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	No known significant effects or critical hazards.
		2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.
Mutagenicity	:	ß-Mercaptoethanol	No known significant effects or critical hazards.
		Micro RNA Isolation Kit Isopropanol	No known significant effects or critical hazards.
		Chloroform: Isoamyl Alcohol	No known significant effects or critical hazards.
		Micro RNA Isolation Kit Denaturing Solution	No known significant effects or critical hazards.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Suspected of causing genetic defects.
		2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.
Reproductive toxicity	:	ß-Mercaptoethanol	Suspected of damaging fertility or the unborn child.
		Micro RNA Isolation Kit Isopropanol	No known significant effects or critical hazards.
		Chloroform: Isoamyl Alcohol	No known significant effects or critical hazards.
		Micro RNA Isolation Kit Denaturing Solution	No known significant effects or critical hazards.
		Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	No known significant effects or critical hazards.
		2M Sodium Acetate pH 4.0	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
ß-Mercaptoethanol					
ß-Mercaptoethanol	244	200	N/A	3	N/A
Micro RNA Isolation Kit Isopropanol					
Propan-2-ol	5000	12800	N/A	72.2	N/A
Chloroform: Isoamyl Alcohol					
Chloroform: Isoamyl Alcohol	506.2	N/A	N/A	7.4	N/A
Trichloromethane	500	N/A	N/A	7.348	N/A
3-Methylbutan-1-ol	1300	N/A	N/A	11	N/A
Micro RNA Isolation Kit Denaturing Solution					
Micro RNA Isolation Kit Denaturing Solution	1059.3	2330.5	N/A	N/A	3.2
Guanidinium thiocyanate	500	1100	N/A	N/A	1.5
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid					
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	101.2	637.7	N/A	3	N/A
Phenol	100	630	N/A	3	N/A
Succinic acid	2260	N/A	N/A	N/A	N/A

Section 11. Toxicological information

2M Sodium Acetate pH 4.0					
2M Sodium Acetate pH 4.0	N/A	2858.1	N/A	29.7	N/A
acetic acid	3310	1060	N/A	11	N/A

Other information :

ß-Mercaptoethanol	Not available.
Micro RNA Isolation Kit Isopropanol	Adverse symptoms may include the following: Repeated exposure may cause skin dryness or cracking.
Chloroform: Isoamyl Alcohol	Adverse symptoms may include the following: jaundice, nausea or vomiting. Repeated exposure may cause skin dryness or cracking.
Micro RNA Isolation Kit Denaturing Solution	Not available.
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	Adverse symptoms may include the following: diarrhoea, headache, nausea or vomiting, pulmonary oedema, skin rash or hives.
2M Sodium Acetate pH 4.0	Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Micro RNA Isolation Kit Isopropanol			
Propan-2-ol	Acute EC50 7550 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 1400000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 4200 mg/l Fresh water	Fish - Rasbora heteromorpha	96 hours
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
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid			
Phenol	Acute EC50 10 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
	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 1450 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

Section 12. Ecological information

	Chronic NOEC 118 µg/l Fresh water	Fish - Oncorhynchus mykiss	90 days
Succinic acid	Acute EC50 40.7 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 374200 µg/l Fresh water	Daphnia - Daphnia magna - Larvae	48 hours
	Acute LC50 >100 mg/l Fresh water	Fish - Danio rerio	96 hours
	Acute NOEC 25 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute NOEC 23 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute NOEC 100 mg/l Fresh water	Fish - Danio rerio	96 hours
2M Sodium Acetate pH 4.0			
acetic acid	Acute EC50 73400 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 65000 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 32 mg/l Marine water	Crustaceans - Artemia salina	48 hours
	Acute LC50 75000 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
ß-Mercaptoethanol				
ß-Mercaptoethanol	OECD 310 Ready Biodegradability - CO2 in Sealed Vessels (Headspace Test)	69 % - Not readily - 60 days	20 mg/l	-
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid				
Succinic acid	OECD 301E Ready Biodegradability - Modified OECD Screening Test	96.55 % - Readily - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
ß-Mercaptoethanol			
ß-Mercaptoethanol	-	-	Not readily
Micro RNA Isolation Kit Isopropanol			
Propan-2-ol	-	-	Readily
Chloroform: Isoamyl Alcohol			
Trichloromethane	-	-	Not readily
3-Methylbutan-1-ol	-	-	Readily
Micro RNA Isolation Kit Denaturing Solution			
Guanidinium thiocyanate	-	-	Inherent
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid			
Phenol	-	-	Inherent
Succinic acid	-	-	Readily

Section 12. Ecological information

2M Sodium Acetate pH 4.0 acetic acid	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
ß-Mercaptoethanol			
ß-Mercaptoethanol	-0.056	-	low
Micro RNA Isolation Kit			
Isopropanol			
Propan-2-ol	0.05	-	low
Chloroform: Isoamyl Alcohol			
Trichloromethane	1.97	690	high
3-Methylbutan-1-ol	1.35	-	low
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid			
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	1.48	-	low
Phenol	1.47	647	high
Succinic acid	-0.59	-	low
2M Sodium Acetate pH 4.0			
acetic acid	-0.17	3.16	low

Mobility in soil

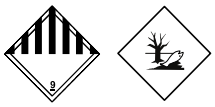
Soil/water partition coefficient (K_{OC}) : Not available.

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 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 IMO instruments : Not available.

Section 15. Regulatory information

Standard for the Uniform Scheduling of Medicines 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

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Section 15. Regulatory information

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.

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 : Not determined.

Turkey : Not determined.

United States : All components are active or exempted.

Viet Nam : All components are listed or exempted.

Section 16. Any other relevant information

History

Date of issue/Date of revision : 03/11/2020

Date of previous issue : 30/08/2018

Version : 6

Key to abbreviations : ADG = Australian Dangerous Goods
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SUSMP = Standard Uniform Schedule of Medicine and Poisons
UN = United Nations

Procedure used to derive the classification

Classification	Justification
ß-Mercaptoethanol	
FLAMMABLE LIQUIDS - Category 4	On basis of test data
ACUTE TOXICITY (oral) - Category 3	On basis of test data
ACUTE TOXICITY (dermal) - Category 2	On basis of test data
ACUTE TOXICITY (inhalation) - Category 3	On basis of test data
SKIN CORROSION/IRRITATION - Category 2	Expert judgment
SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1	Expert judgment
SKIN SENSITISATION - Category 1A	Expert judgment
REPRODUCTIVE TOXICITY - Category 2	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2	Expert judgment
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1	Expert judgment
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category	Expert judgment

Section 16. Any other relevant information

2	
Micro RNA Isolation Kit Isopropanol	
FLAMMABLE LIQUIDS - Category 2	On basis of test data
SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A	Calculation method
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3	Calculation method
Chloroform: Isoamyl Alcohol	
ACUTE TOXICITY (oral) - Category 4	Calculation method
ACUTE TOXICITY (inhalation) - Category 3	Calculation method
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A	Calculation method
CARCINOGENICITY - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2	Calculation method
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3	Calculation method
Micro RNA Isolation Kit Denaturing Solution	
ACUTE TOXICITY (oral) - Category 4	Calculation method
ACUTE TOXICITY (inhalation) - Category 4	Calculation method
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3	Calculation method
Phenol pH 5.3 - 5.7 Equilibrated with 0.1 M Succinic Acid	
FLAMMABLE LIQUIDS - Category 4	On basis of test data
ACUTE TOXICITY (oral) - Category 3	Calculation method
ACUTE TOXICITY (dermal) - Category 3	Calculation method
ACUTE TOXICITY (inhalation) - Category 3	Calculation method
SKIN CORROSION/IRRITATION - Category 1B	Calculation method
SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1	Calculation method
GERM CELL MUTAGENICITY - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2	Calculation method
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	Calculation method

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

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