KIT SAFETY DATA SHEET

Kit Product Name Lyphochek Urine Metals Control

Kit Catalogue Number(s) 402X

Revision date 11-Jun-2021

Kit Contents

Catalogue Number(s)	Product Name
400	Lyphochek Urine Metals Control, Level 1
405	Lyphochek Urine Metals Control, Level 2

SAFETY DATA SHEET

This safety data sheet complies with the requirements of:
SS586: 2008 (2014)

Revision date 11-Jun-2021 **Revision Number** 1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product Name Lyphochek Urine Metals Control, Level 1

Other means of identification

Catalogue Number(s) 400

Pure substance/mixture Mixture

Contains Trichloroacetic acid

Recommended use of the chemical and restrictions on use

Recommended use In vitro diagnostic

Uses advised against No information available

Details of the supplier of the safety data sheet

Corporate Headquarters
Bio-Rad Laboratories Inc.
1000 Alfred Nobel Drive
Hercules, CA 94547
USA

Manufacturer
Bio-Rad Laboratories Inc.
9500 Jeronimo Road
Irvine, California 92618
USA

Legal Entity / Contact Address
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Pathumwan, Bangkok 10330
Thailand

For further information, please contact

Technical Service +66 2 652 8313
ctsthailand@bio-rad.com

Emergency telephone number

24 Hour Emergency Phone Number CHEMTREC Singapore: 65-31581349

SECTION 2: Hazards identification

GHS Classification

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Specific target organ toxicity — single exposure	Category 3

Label elements

Signal word
Warning

Hazard statements
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation

Precautionary Statements - Prevention
Avoid breathing dust/fume/gas/mist/vapours/spray
Wash face, hands and any exposed skin thoroughly after handling
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Precautionary Statements - Response
Specific treatment (see .? on this label)
If skin irritation occurs: Get medical advice/attention
Take off all contaminated clothing and wash it before reuse
IF ON SKIN: Wash with plenty of water and soap
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Call a POISON CENTRE or doctor if you feel unwell
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other hazards which do not result in classification

SECTION 3: Composition/information on ingredients

Substance

Not applicable

Mixture

Chemical name	EC No	CAS No	Weight-%
Trichloroacetic acid	200-927-2	76-03-9	1 - 2.5
Phenol	203-632-7	108-95-2	0.3 - 0.999
Sodium fluoride	231-667-8	7681-49-4	0.1 - 0.299
Zinc sulfate, monohydrate	-	7446-19-7	0.01 - 0.099
Arsenic acid (H3AsO4), disodium salt, heptahydrate	-	10048-95-0	0.01 - 0.099
Selenium dioxide	231-194-7	7446-08-4	0.001 - 0.01
Mercury chloride (HgCl2)	231-299-8	7487-94-7	0.001 - 0.01
Aluminum nitrate nonahydrate	-	7784-27-2	0.001 - 0.01
Thallium(I) acetate	209-257-5	563-68-8	< 0.001
Pentachlorophenol	201-778-6	87-86-5	< 0.001
Lead chloride (PbCl2)	231-845-5	7758-95-4	< 0.001
Cobalt(II) sulfate (1:1), heptahydrate	-	10026-24-1	< 0.001
Cadmium chloride	233-296-7	10108-64-2	< 0.001
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4)]di-, dipotassium, trihydrate, stereoisomer	-	28300-74-5	< 0.001

Non-hazardous ingredients	Proprietary	Balance

SECTION 4: First aid measures

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Contains components derived from human urine.

Inhalation Remove to fresh air. IF exposed or concerned: Get medical advice/attention. Get medical attention immediately if symptoms occur.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. Do not rub affected area.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a doctor.

Most important symptoms and effects, both acute and delayed

Symptoms May cause redness and tearing of the eyes. Burning sensation.

For emergency responders

Self-protection of the first aider Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

Indication of any immediate medical attention and special treatment needed

Note to doctors Contains human source material and / or potentially infectious components.

SECTION 5: Firefighting measures

Suitable Extinguishing Media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Specific hazards arising from the chemical None known.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Avoid contact with skin, eyes or clothing.

Other information Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Do not allow into any sewer, on the ground or into any body of water.

Methods for cleaning up Clean contaminated surface thoroughly. Use:. Disinfectant.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse. Ensure adequate ventilation. Avoid breathing vapours or mists. In case of insufficient ventilation, wear suitable respiratory equipment.

General hygiene considerations Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing. Follow universal and standard precautions for handling potentially infectious materials.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Store according to product and label instructions.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational exposure limits

Chemical name	Singapore	ACGIH TLV
Trichloroacetic acid 76-03-9	PEL: 1 ppm PEL: 6.7 mg/m³	TWA: 0.5 ppm
Phenol 108-95-2	PEL: 5 ppm PEL: 19 mg/m³	TWA: 5 ppm S*
Sodium fluoride 7681-49-4	PEL: 2.5 mg/m³	TWA: 2.5 mg/m³ F
Arsenic acid (H3AsO4), disodium salt, heptahydrate 10048-95-0	PEL: 0.01 mg/m³	TWA: 0.01 mg/m³ As
Selenium dioxide 7446-08-4	PEL: 0.2 mg/m³	TWA: 0.2 mg/m³ Se
Mercury chloride (HgCl2) 7487-94-7	PEL: 0.025 mg/m³	TWA: 0.025 mg/m³ Hg S*
Aluminum nitrate nonahydrate 7784-27-2	PEL: 2 mg/m³	No data available
Thallium(I) acetate 563-68-8	PEL: 0.1 mg/m³	TWA: 0.02 mg/m³ Tl inhalable particulate matter S*
Pentachlorophenol	PEL: 0.5 mg/m³	STEL: 1 mg/m³ inhalable fraction and

87-86-5		vapor TWA: 0.5 mg/m³ inhalable fraction and vapor S*
Lead chloride (PbCl2) 7758-95-4	PEL: 0.15 mg/m³	TWA: 0.05 mg/m³ Pb
Cobalt(II) sulfate (1:1), heptahydrate 10026-24-1	PEL: 0.02 mg/m³	TWA: 0.02 mg/m³ Co inhalable particulate matter
Cadmium chloride 10108-64-2	PEL: 0.002 mg/m³	TWA: 0.01 mg/m³ Cd TWA: 0.002 mg/m³ Cd respirable particulate matter
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2:O3, O4)]di-, dipotassium, trihydrate, stereoisomer 28300-74-5	PEL: 0.5 mg/m³	TWA: 0.5 mg/m³ Sb

Biological occupational exposure limits

Chemical name	Singapore	ACGIH
Phenol 108-95-2	No data available	250 mg/g creatinine - urine (Phenol with hydrolysis) - end of shift
Sodium fluoride 7681-49-4	No data available	2 mg/L - urine (Fluoride) - prior to shift 3 mg/L - urine (Fluoride) - end of shift
Mercury chloride (HgCl2) 7487-94-7	50 µg/L - urine (Mercury) -	35 µg/g creatinine - urine (Total inorganic mercury) - prior to shift 15 µg/L - blood (Total inorganic mercury) - end of shift at end of workweek
Pentachlorophenol 87-86-5	No data available	- urine (Pentachlorophenol with hydrolysis) - prior to last shift of workweek
Lead chloride (PbCl2) 7758-95-4	11 g/dL - blood (Hb) - 10 g/dL - blood (Hb) - 50 µg/dL - blood (Lead) - 30 µg/dL - blood (Lead) -	200 µg/L - blood (Lead) - not critical
Cobalt(II) sulfate (1:1), heptahydrate 10026-24-1	No data available	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Cadmium chloride 10108-64-2	No data available	5 µg/g creatinine - urine (Cadmium) - not critical 5 µg/L - blood (Cadmium) - not critical

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection Wear suitable protective clothing.

Hand protection Wear suitable gloves. Impervious gloves.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Environmental exposure controls No information available.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid
Appearance	powder or cake, lyophilised
Colour	yellow
Odour	Slight.
Odour threshold	No information available

Property	**Values**	**Remarks • Method**
pH	4.9-5.1	
Melting point / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash point	No data available	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapour pressure	No data available	None known
Vapour density	No data available	None known
Relative density	No data available	None known
Water solubility	Soluble in water	
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature		None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	Not applicable	
Oxidising properties	Not applicable	

Other information No information available

SECTION 10: Stability and reactivity

Reactivity

Reactivity No information available.

Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Possibility of hazardous reactions None under normal processing.

Conditions to avoid

Conditions to avoid None known based on information supplied.

Incompatible materials

Incompatible materials Strong acids. Strong bases. Strong oxidising agents.

Hazardous decomposition products

Hazardous decomposition products None known based on information supplied.

SECTION 11: Toxicological information

Information on likely routes of exposure

Product Information

Inhalation	Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.
Eye contact	Specific test data for the substance or mixture is not available. Irritating to eyes. (based on components). Causes serious eye irritation.
Skin contact	Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).
Ingestion	Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Redness. May cause redness and tearing of the eyes.

Acute toxicity

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	5,194.10 mg/kg
ATEmix (dermal)	31,690.50 mg/kg
ATEmix (inhalation-dust/mist)	37.60 mg/l

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Trichloroacetic acid	= 3320 mg/kg (Rat)	> 2000 mg/kg (Rat)	
Phenol	= 340 mg/kg (Rat) = 317 mg/kg (Rat)	= 630 mg/kg (Rabbit)	= 316 mg/m³ (Rat) 4 h
Sodium fluoride	= 52 mg/kg (Rat)	= 175 mg/kg (Rat)	
Selenium dioxide	= 48 mg/kg (Rat) = 68.1 mg/kg (Rat)	= 4 mg/kg (Rabbit)	
Mercury chloride (HgCl2)	= 1 mg/kg (Rat)	= 41 mg/kg (Rabbit) = 41 mg/kg (Rat)	
Pentachlorophenol	= 27 mg/kg (Rat)	= 40 mg/kg (Rabbit) = 26 mg/kg (Rat)	
Lead chloride (PbCl2)	> 1947 mg/kg (Rat)		
Acetic acid, manganese(2+) salt, tetrahydrate	= 3730 mg/kg (Rat)		
Cadmium chloride	= 88 mg/kg (Rat)		
Cobalt(II) sulfate (1:1), heptahydrate	= 582 mg/kg (Rat)		
Thallium(I) acetate	= 41.3 mg/kg (Rat)		
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4)]di-,	= 115 mg/kg (Rat)		

dipotassium, trihydrate, stereoisomer			

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

Skin corrosion/irritation Classification based on data available for ingredients. Irritating to skin.

Product Information

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes serious eye irritation.

Product Information

Respiratory or skin sensitisation Based on available data, the classification criteria are not met.

Product Information

Germ cell mutagenicity Based on available data, the classification criteria are not met.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as mutagenic.

Product Information	
Chemical name	European Union
Phenol	Muta. 2
Mercury chloride (HgCl2)	Muta. 2
Cadmium chloride	Muta. 1B

Carcinogenicity Based on available data, the classification criteria are not met.

Product Information	
Chemical name	European Union
Arsenic acid (H3AsO4), disodium salt, heptahydrate	Carc. 1A
Pentachlorophenol	Carc. 2
Cadmium chloride	Carc. 1B

Reproductive toxicity Based on available data, the classification criteria are not met.

Product Information	
Chemical name	European Union
Mercury chloride (HgCl2)	Repr. 2
Lead chloride (PbCl2)	Repr. 1A
Cadmium chloride	Repr. 1B

STOT - single exposure May cause respiratory irritation.

Product Information

STOT - repeated exposure Based on available data, the classification criteria are not met.

Product Information

Aspiration hazard Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

Ecotoxicity

Ecotoxicity Harmful to aquatic life with long lasting effects.

Unknown aquatic toxicity Contains 0 % of components with unknown hazards to the aquatic environment

Chemical name	Algae/aquatic plants	Fish	Crustacea
Phenol	EC50: 0.0188 - 0.1044mg/L (96h, Pseudokirchneriella subcapitata) EC50: 187 - 279mg/L (72h, Desmodesmus subspicatus) EC50: =46.42mg/L (96h, Pseudokirchneriella subcapitata)	LC50: 11.9 - 25.3mg/L (96h, Lepomis macrochirus) LC50: 11.9 - 50.5mg/L (96h, Pimephales promelas) LC50: 20.5 - 25.6mg/L (96h, Pimephales promelas) LC50: 23.4 - 36.6mg/L (96h, Oryzias latipes)	EC50: 10.2 - 15.5mg/L (48h, Daphnia magna) EC50: 4.24 - 10.7mg/L (48h, Daphnia magna)

		LC50: 33.9 - 43.3mg/L (96h, Oryzias latipes) LC50: 34.09 - 47.64mg/L (96h, Poecilia reticulata) LC50: 4.23 - 7.49mg/L (96h, Oncorhynchus mykiss) LC50: 5.0 - 12.0mg/L (96h, Oncorhynchus mykiss) LC50: 5.449 - 6.789mg/L (96h, Oncorhynchus mykiss) LC50: 7.5 - 14mg/L (96h, Oncorhynchus mykiss) LC50: =0.00175mg/L (96h, Cyprinus carpio) LC50: =11.5mg/L (96h, Lepomis macrochirus) LC50: =13.5mg/L (96h, Lepomis macrochirus) LC50: =27.8mg/L (96h, Brachydanio rerio) LC50: =31mg/L (96h, Poecilia reticulata) LC50: =32mg/L (96h, Pimephales promelas)	
Sodium fluoride	EC50: =272mg/L (96h, Pseudokirchneriella subcapitata) EC50: =850mg/L (72h, Desmodesmus subspicatus)	LC50: 38 - 68mg/L (96h, Oncorhynchus mykiss) LC50: =180mg/L (96h, Pimephales promelas) LC50: =830mg/L (96h, Lepomis macrochirus) LC50: >530mg/L (96h, Lepomis macrochirus)	EC50: =338mg/L (48h, Daphnia magna) EC50: =98mg/L (48h, Daphnia magna)
Mercury chloride (HgCl2)	-	LC50: 0.014 - 0.019mg/L (96h, Oncorhynchus mykiss) LC50: 0.02 - 0.26mg/L (96h, Cyprinus carpio) LC50: 0.096 - 0.133mg/L (96h, Lepomis macrochirus) LC50: 0.1 - 0.182mg/L (96h, Pimephales promelas) LC50: 0.13 - 0.19mg/L (96h, Oncorhynchus mykiss) LC50: 5.933 - 10.34mg/L (96h, Poecilia reticulata) LC50: =0.041mg/L (96h, Poecilia reticulata) LC50: =0.155mg/L (96h, Pimephales promelas) LC50: =0.4mg/L (96h, Lepomis macrochirus) LC50: =4.425mg/L (96h, Cyprinus carpio)	EC50: =0.0015mg/L (48h, Daphnia magna) EC50: >0.012mg/L (48h, Daphnia magna)
Pentachlorophenol	EC50: 0.005 - 0.3mg/L (96h, Pseudokirchneriella subcapitata) EC50: =0.1mg/L (72h, Pseudokirchneriella subcapitata) EC50: =0.183mg/L (72h, Desmodesmus subspicatus)	LC50: 0.031 - 0.038mg/L (96h, Oncorhynchus mykiss) LC50: 0.079 - 0.187mg/L (96h, Pimephales promelas) LC50: 0.102 - 0.128mg/L (96h, Oncorhynchus mykiss) LC50: 0.103 - 0.129mg/L (96h, Lepomis macrochirus) LC50: 0.11 - 0.49mg/L (96h, Pimephales promelas) LC50: 0.170 - 0.3mg/L (96h, Oryzias latipes)	EC50: 0.138 - 0.307mg/L (48h, Daphnia magna)

		LC50: =0.36mg/L (96h, Poecilia reticulata)	
Cadmium chloride	EC50: =3.7mg/L (96h, Chlorella vulgaris)	LC50: =0.0409mg/L (96h, Pimephales promelas)	EC50: 0.012 - 0.054mg/L (48h, Daphnia magna)

Persistence and degradability

Persistence and degradability No information available.

Bioaccumulative potential

Bioaccumulation There is no data for this product.

Chemical name	Partition coefficient
Phenol	1.5
Pentachlorophenol	5.01

Mobility

Mobility in soil No information available.

PBT and vPvB assessment

Chemical name	PBT and vPvB assessment
Trichloroacetic acid	The substance is not PBT / vPvB
Phenol	The substance is not PBT / vPvB
Sodium fluoride	The substance is not PBT / vPvB PBT assessment does not apply
Zinc sulfate, monohydrate	The substance is not PBT / vPvB
Selenium dioxide	PBT assessment does not apply
Aluminum nitrate nonahydrate	PBT assessment does not apply
Lead chloride (PbCl2)	PBT assessment does not apply
Cadmium chloride	PBT assessment does not apply

Other adverse effects

Other adverse effects No information available

Chemical name	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disrupters - Evaluated Substances	Endocrine disrupting potential
Pentachlorophenol	Group III Chemical	-	-

SECTION 13: Disposal considerations

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

SECTION 14: Transport information

ADR Not regulated

IMDG Not regulated

Transport in bulk according to Annex II of MARPOL and the IBC Code No information available

IATA Not regulated

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Singapore

Environmental Protection and Management (Hazardous Substances) Regulations
Verify that licence requirements are met.

Chemical name	Hazardous Substances	transport
Phenol	Exclusions: 1. Preparations containing <1%, weight in weight, of Phenols. 2. Phenols which are intended for the treatment of human ailments and other medical purposes. 3. Soaps for washing. 4. Tar, coal or wood, crude or refined	500kg
Sodium fluoride	Exclusions: 1. Substances containing <=3%, weight in weight, of Sodium fluoride or Sodium silicofluoride as a preservative. 2. Substances containing Sodium fluoride intended for the treatment of human ailments	
Arsenic acid (H3AsO4), disodium salt, heptahydrate	-	50kg
Mercury chloride (HgCl2)	Exclusions: 1. controlled EEE containing Mercury <=0.1% maximum concentration value by weight of homogeneous material in controlled EEE. 2. Cold cathode fluorescent lamp or external electrode fluorescent lamp, used for purposes other than general lighting, that (a) is <=500 mm long and contains <=3.5 mg of Mercury; (b) is >500 mm long but <=1500 mm long and contains <=5 mg of mercury; or (b) >1500 mm long and contains <=13 mg of mercury Present Exclusions: Batteries (including those in button form) containing not more than 0.0005% by weight of mercury per cell.	0kg
Thallium(I) acetate	Present	
Pentachlorophenol	Exclusions: Substances containing <=1%, weight in weight, of Chlorophenols	
Lead chloride (PbCl2)	Exclusions: 1. controlled EEE containing Lead <=0.1% maximum concentration value by weight of homogeneous material in controlled EEE. 2. Lead in glass of cathode ray tube. 3. Lead <=0.2% by weight, in glass of fluorescent tube. 4. Lead <=0.35% by weight, as an alloying element in steel for machining purposes or galvanised steel. 5. Lead <=0.4% by weight, as an alloying element in aluminium. 6. Lead <=4% by weight, in copper alloy. 7. Lead in high melting temperature type solder	

	(that is, lead-based alloy containing >=85% lead by weight). 8. Electrical and electronic component containing Lead in (a) glass or ceramic (other than dielectric ceramic in capacitor); or (b) glass or ceramic matrix compound. 9. Lead in dielectric ceramic in capacitor for rated voltage of >=125 V AC, 250 V DC. 10. Lead in bearing shell or bush for refrigerant-containing compressor for heating, ventilation, air conditioning or refrigeration application. 11. Lead in white glass for optical application. 12. Lead in filter glass or glass used for reflectance standards. 13. Lead in printing ink for the application of enamel on glass. 14. Lead in solder for (a) completing viable electrical connection between semiconductor die and carrier within integrated circuit flip chip package; (b) soldering to machined-through hole discoidal or planar array ceramic multilayer capacitor; (c) soldering thin copper wire (with diameter <= 100 µm) in power transformer. 15. Lead in soldering materials in mercury-free flat fluorescent lamp. 16. Lead oxide in surface conduction electron emitter display used in structural element. 17. Lead bound in crystal glass. 18. Lead in cermet-based trimmer potentiometer element. 18. Lead in plating layer of high-voltage diode on base of zinc borate glass body Exclusions: 1. Lead compounds in paint in which the Lead content is <=0.06% by weight of the paint. 2. Lead compounds in paint in which the container is affixed with an appropriate label. 3. The labels to be used for paints containing Lead compounds are in accordance with Part IV of the Second Schedule	
Cadmium chloride	Exclusions: 1. controlled EEE containing Cadmium <=0.01% maximum concentration value by weight of homogeneous material in controlled EEE. 2. Cadmium and its compounds in electrical contact. 3. Cadmium in filter glass or glass used for reflectance standards. 4. Cadmium in printing ink for the application of enamel on glass. 5. Cadmium alloy as electrical or mechanical solder joint to electrical conductor located directly on voice coil in transducer used in high-powered loudspeaker with sound pressure level of >=100 dB (A). 6. Cadmium and cadmium oxide in thick film paste used on aluminium bonded beryllium oxide	

Environmental Public Health Act

Dispose of waste product or used containers according to local regulations.

Hazardous Waste (Control of Export, Import and Transit) Act
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Take note that wastes may be subject to export, import, or transit controls pursuant to the Basel convention and/or local regulations implementing the Basel convention.

Poison
Verify that licence requirements are met Verify that requirements related to using, handling, and storing substances subject to prohibition, authorisation or restriction are met

Chemical name	Poison	Poison Schedule Number
Phenol	X	Second schedule Fourth schedule
Sodium fluoride	X	First schedule Second schedule Third schedule
Arsenic acid (H3AsO4), disodium salt, heptahydrate	X	
Thallium(I) acetate	X	First schedule Sixth schedule
Lead chloride (PbCl2)		Second schedule Fourth schedule

Strategic Goods (Control) Act
Verify that requirements related to using, handling, and storing substances subject to prohibition, authorisation or restriction are met.

Chemical name	Strategic Goods (Control) Act
Sodium fluoride	1C350

Workplace Safety and Health Act
See section 8 for national exposure control parameters. Comply with the health and safety at work laws.

Pre-employment screening and appropriate health surveillance

Chemical name	Pre-employment screening and appropriate health surveillance
Arsenic acid (H3AsO4), disodium salt, heptahydrate - 10048-95-0	X
Mercury chloride (HgCl2) - 7487-94-7	X
Lead chloride (PbCl2) - 7758-95-4	X
Cadmium chloride - 10108-64-2	X

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants

Chemical name	Annex
Pentachlorophenol - 87-86-5	A

The Rotterdam Convention

Chemical name	Chemicals Subject to Prior Informed Consent (PIC)
Mercury chloride (HgCl2) - 7487-94-7	Rotterdam
Pentachlorophenol - 87-86-5	Rotterdam

International Inventories
Contact supplier for inventory compliance status

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
Organisation for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Label elements
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P312 - Call a POISON CENTER or doctor if you feel unwell
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P273 - Avoid release to the environment
P280 - Wear protective gloves/protective clothing/eye protection/face protection

Issuing Date	Bio-Rad Laboratories, Environmental Health and Safety
Revision date	11-Jun-2021
Revision Note	Significant changes throughout SDS. Review all sections.

This safety data sheet complies with the requirements of: SS586: 2008 (2014)

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product Name Lyphochek Urine Metals Control, Level 2

Other means of identification

Catalogue Number(s) 405

Pure substance/mixture Mixture

Contains Trichloroacetic acid, Phenol

Recommended use of the chemical and restrictions on use

Recommended use In vitro diagnostic

Uses advised against No information available

Details of the supplier of the safety data sheet

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Hercules, CA 94547
USA

Manufacturer
Bio-Rad Laboratories Inc.
9500 Jeronimo Road
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Legal Entity / Contact Address
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Emergency telephone number

24 Hour Emergency Phone Number CHEMTREC Singapore: 65-31581349

SECTION 2: Hazards identification

GHS Classification

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Germ cell mutagenicity	Category 2
Specific target organ toxicity — single exposure	Category 3
Chronic aquatic toxicity	Category 2

Label elements

Signal word
Danger

Hazard statements
H302 - Harmful if swallowed
H315 - Causes skin irritation
H318 - Causes serious eye damage
H335 - May cause respiratory irritation
H341 - Suspected of causing genetic defects
H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Avoid breathing dust/fume/gas/mist/vapours/spray
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Avoid release to the environment
Wear protective gloves/protective clothing/eye protection/face protection
Precautionary Statements - Response

If skin irritation occurs: Get medical advice/attention
Take off all contaminated clothing and wash it before reuse
IF ON SKIN: Wash with plenty of water and soap
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTRE or doctor
Call a POISON CENTRE or doctor if you feel unwell
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Rinse mouth
IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
Collect spillage
Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other hazards which do not result in classification

SECTION 3: Composition/information on ingredients

Substance

Not applicable

Mixture

Chemical name	EC No	CAS No	Weight-%
Trichloroacetic acid	200-927-2	76-03-9	2.5 - 5
Phenol	203-632-7	108-95-2	1 - 2.5
Sodium fluoride	231-667-8	7681-49-4	0.3 - 0.999
Zinc sulfate, monohydrate	-	7446-19-7	0.01 - 0.099
Arsenic acid (H3AsO4),	-	10048-95-0	0.01 - 0.099

disodium salt, heptahydrate			
Selenium dioxide	231-194-7	7446-08-4	0.001 - 0.01
Thallium(I) acetate	209-257-5	563-68-8	0.001 - 0.01
Mercury chloride (HgCl2)	231-299-8	7487-94-7	0.001 - 0.01
Lead chloride (PbCl2)	231-845-5	7758-95-4	0.001 - 0.01
Copper(2+) chloride dihydrate	-	10125-13-0	0.001 - 0.01
Aluminum nitrate nonahydrate	-	7784-27-2	0.001 - 0.01
Pentachlorophenol	201-778-6	87-86-5	< 0.001
Nickel(II) sulfate hexahydrate (1:1:6)	-	10101-97-0	< 0.001
Cobalt(II) sulfate (1:1), heptahydrate	-	10026-24-1	< 0.001
Chromium(III) chloride hexahydrate	-	10060-12-5	< 0.001
Cadmium chloride	233-296-7	10108-64-2	< 0.001
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4)]di-, dipotassium, trihydrate, stereoisomer	-	28300-74-5	< 0.001

Non-hazardous ingredients Proprietary Balance

SECTION 4: First aid measures

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required. Contains components derived from human urine.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur. IF exposed or concerned: Get medical advice/attention.

Eye contact Get immediate medical advice/attention. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a doctor.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation.

For emergency responders

Self-protection of the first aider Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

Indication of any immediate medical attention and special treatment needed

Note to doctors Contains human source material and / or potentially infectious components.

SECTION 5: Firefighting measures

Suitable Extinguishing Media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the

surrounding environment.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Specific hazards arising from the chemical None known.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Ensure adequate ventilation. Evacuate personnel to safe areas.

Other information Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Do not allow into any sewer, on the ground or into any body of water.

Methods for cleaning up Clean contaminated surface thoroughly. Use:. Disinfectant.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Remove contaminated clothing and shoes. Take off contaminated clothing and wash it before reuse. Ensure adequate ventilation. Avoid breathing vapours or mists. In case of insufficient ventilation, wear suitable respiratory equipment.

General hygiene considerations Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Follow universal and standard precautions for handling potentially infectious materials.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Store locked up. Store according to product and label instructions.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational exposure limits

Chemical name	Singapore	ACGIH TLV
Trichloroacetic acid 76-03-9	PEL: 1 ppm PEL: 6.7 mg/m³	TWA: 0.5 ppm
Phenol 108-95-2	PEL: 5 ppm PEL: 19 mg/m³	TWA: 5 ppm S*
Sodium fluoride 7681-49-4	PEL: 2.5 mg/m³	TWA: 2.5 mg/m³ F
Arsenic acid (H3AsO4), disodium salt, heptahydrate 10048-95-0	PEL: 0.01 mg/m³	TWA: 0.01 mg/m³ As
Selenium dioxide 7446-08-4	PEL: 0.2 mg/m³	TWA: 0.2 mg/m³ Se
Thallium(I) acetate 563-68-8	PEL: 0.1 mg/m³	TWA: 0.02 mg/m³ Tl inhalable particulate matter S*
Mercury chloride (HgCl2) 7487-94-7	PEL: 0.025 mg/m³	TWA: 0.025 mg/m³ Hg S*
Lead chloride (PbCl2) 7758-95-4	PEL: 0.15 mg/m³	TWA: 0.05 mg/m³ Pb
Copper(2+) chloride dihydrate 10125-13-0		TWA: 1 mg/m³ Cu dust and mist
Aluminum nitrate nonahydrate 7784-27-2	PEL: 2 mg/m³	No data available
Pentachlorophenol 87-86-5	PEL: 0.5 mg/m³	STEL: 1 mg/m³ inhalable fraction and vapor TWA: 0.5 mg/m³ inhalable fraction and vapor S*
Nickel(II) sulfate hexahydrate (1:1:6) 10101-97-0	PEL: 0.1 mg/m³	TWA: 0.1 mg/m³ Ni inhalable particulate matter
Cobalt(II) sulfate (1:1), heptahydrate 10026-24-1	PEL: 0.02 mg/m³	TWA: 0.02 mg/m³ Co inhalable particulate matter
Chromium(III) chloride hexahydrate 10060-12-5	PEL: 0.5 mg/m³	No data available
Cadmium chloride 10108-64-2	PEL: 0.002 mg/m³	TWA: 0.01 mg/m³ Cd TWA: 0.002 mg/m³ Cd respirable particulate matter
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2:O3, O4)]di-, dipotassium, trihydrate, stereoisomer 28300-74-5	PEL: 0.5 mg/m³	TWA: 0.5 mg/m³ Sb

Biological occupational exposure limits

Chemical name	Singapore	ACGIH
Phenol 108-95-2	No data available	250 mg/g creatinine - urine (Phenol with hydrolysis) - end of shift
Sodium fluoride 7681-49-4	No data available	2 mg/L - urine (Fluoride) - prior to shift 3 mg/L - urine (Fluoride) - end of shift
Mercury chloride (HgCl2) 7487-94-7	50 µg/L - urine (Mercury) -	35 µg/g creatinine - urine (Total inorganic mercury) - prior to shift 15 µg/L - blood (Total inorganic mercury) - end of shift at end of workweek
Lead chloride (PbCl2) 7758-95-4	11 g/dL - blood (Hb) - 10 g/dL - blood (Hb) - 50 µg/dL - blood (Lead) - 30 µg/dL - blood (Lead) -	200 µg/L - blood (Lead) - not critical
Pentachlorophenol 87-86-5	No data available	- urine (Pentachlorophenol with hydrolysis) - prior to last shift of workweek

Cobalt(II) sulfate (1:1), heptahydrate 10026-24-1	No data available	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Cadmium chloride 10108-64-2	No data available	5 µg/g creatinine - urine (Cadmium) - not critical 5 µg/L - blood (Cadmium) - not critical

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection Wear suitable protective clothing.

Hand protection Wear suitable gloves. Impervious gloves.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Environmental exposure controls No information available.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state Solid
Appearance powder or cake, lyophilised
Colour yellow
Odour Slight.
Odour threshold No information available

Property	Values	Remarks • Method
pH	4.9-5.1	
Melting point / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash point	No data available	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapour pressure	No data available	None known
Vapour density	No data available	None known
Relative density	No data available	None known
Water solubility	Soluble in water	
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature		None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	Not applicable	
Oxidising properties	Not applicable	

Other information No information available

SECTION 10: Stability and reactivity

Reactivity

Reactivity No information available.

Chemical stability

Stability Stable under normal conditions.

Explosion data
Sensitivity to mechanical impact None.
Sensitivity to static discharge None.

Possibility of hazardous reactions None under normal processing.

Conditions to avoid

Conditions to avoid None known based on information supplied.

Incompatible materials

Incompatible materials Strong acids. Strong bases. Strong oxidising agents.

Hazardous decomposition products

Hazardous decomposition products None known based on information supplied.

SECTION 11: Toxicological information

Information on likely routes of exposure

Product Information

Inhalation Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye damage. May cause irreversible damage to eyes. (based on components).

Skin contact Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).

Ingestion Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Harmful if swallowed. (based on components).

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Redness. Burning. May cause blindness. May cause redness and tearing of the eyes.

Acute toxicity

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document
ATEmix (oral) 1,511.20 mg/kg
ATEmix (dermal) 8,669.70 mg/kg
ATEmix (inhalation-dust/mist) 11.90 mg/l

67.999 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Trichloroacetic acid	= 3320 mg/kg (Rat)	> 2000 mg/kg (Rat)	
Phenol	= 340 mg/kg (Rat) = 317 mg/kg (Rat)	= 630 mg/kg (Rabbit)	= 316 mg/m³ (Rat) 4 h
Sodium fluoride	= 52 mg/kg (Rat)	= 175 mg/kg (Rat)	
Selenium dioxide	= 48 mg/kg (Rat) = 68.1 mg/kg (Rat)	= 4 mg/kg (Rabbit)	
Mercury chloride (HgCl2)	= 1 mg/kg (Rat)	= 41 mg/kg (Rabbit) = 41 mg/kg (Rat)	
Thallium(I) acetate	= 41.3 mg/kg (Rat)		
Lead chloride (PbCl2)	> 1947 mg/kg (Rat)		
Cobalt(II) sulfate (1:1), heptahydrate	= 582 mg/kg (Rat)		
Antimonate(2-), bis[.mu.-(2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4)]di-, dipotassium, trihydrate, stereoisomer	= 115 mg/kg (Rat)		
Chromium(III) chloride hexahydrate	= 1790 mg/kg (Rat)		
Nickel(II) sulfate hexahydrate (1:1:6)	= 264 mg/kg (Rat)		
Cadmium chloride	= 88 mg/kg (Rat)		
Acetic acid, manganese(2+) salt, tetrahydrate	= 3730 mg/kg (Rat)		
Pentachlorophenol	= 27 mg/kg (Rat)	= 40 mg/kg (Rabbit) = 26 mg/kg (Rat)	

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

Skin corrosion/irritation Classification based on data available for ingredients. Irritating to skin.

Product Information

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes burns. Risk of serious damage to eyes.

Product Information

Respiratory or skin sensitisation Based on available data, the classification criteria are not met.

Product Information

Germ cell mutagenicity Contains a known or suspected mutagen. Classification based on data available for ingredients. Suspected of causing genetic defects.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as mutagenic.

Product Information

Chemical name	European Union
Phenol	Muta. 2
Mercury chloride (HgCl2)	Muta. 2
Cadmium chloride	Muta. 1B

Carcinogenicity Based on available data, the classification criteria are not met.

Product Information

Chemical name	European Union
Arsenic acid (H3AsO4), disodium salt, heptahydrate	Carc. 1A

Pentachlorophenol	Carc. 2
Cadmium chloride	Carc. 1B

Reproductive toxicity Based on available data, the classification criteria are not met.

Product Information	
Chemical name	European Union
Mercury chloride (HgCl2)	Repr. 2
Lead chloride (PbCl2)	Repr. 1A
Cadmium chloride	Repr. 1B

STOT - single exposure May cause respiratory irritation.

Product Information

STOT - repeated exposure Based on available data, the classification criteria are not met.

Product Information

Aspiration hazard Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

Ecotoxicity

Ecotoxicity Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Unknown aquatic toxicity Contains 0 % of components with unknown hazards to the aquatic environment

Chemical name	Algae/aquatic plants	Fish	Crustacea
Phenol	EC50: 0.0188 - 0.1044mg/L (96h, Pseudokirchneriella subcapitata) EC50: 187 - 279mg/L (72h, Desmodesmus subspicatus) EC50: =46.42mg/L (96h, Pseudokirchneriella subcapitata)	LC50: 11.9 - 25.3mg/L (96h, Lepomis macrochirus) LC50: 11.9 - 50.5mg/L (96h, Pimephales promelas) LC50: 20.5 - 25.6mg/L (96h, Pimephales promelas) LC50: 23.4 - 36.6mg/L (96h, Oryzias latipes) LC50: 33.9 - 43.3mg/L (96h, Oryzias latipes) LC50: 34.09 - 47.64mg/L (96h, Poecilia reticulata) LC50: 4.23 - 7.49mg/L (96h, Oncorhynchus mykiss) LC50: 5.0 - 12.0mg/L (96h, Oncorhynchus mykiss) LC50: 5.449 - 6.789mg/L (96h, Oncorhynchus mykiss) LC50: 7.5 - 14mg/L (96h, Oncorhynchus mykiss) LC50: =0.00175mg/L (96h, Cyprinus carpio) LC50: =11.5mg/L (96h, Lepomis macrochirus) LC50: =13.5mg/L (96h, Lepomis macrochirus) LC50: =27.8mg/L (96h, Brachydanio rerio) LC50: =31mg/L (96h, Poecilia reticulata) LC50: =32mg/L (96h, Pimephales promelas)	EC50: 10.2 - 15.5mg/L (48h, Daphnia magna) EC50: 4.24 - 10.7mg/L (48h, Daphnia magna)
Sodium fluoride	EC50: =272mg/L (96h, Pseudokirchneriella subcapitata)	LC50: 38 - 68mg/L (96h, Oncorhynchus mykiss) LC50: =180mg/L (96h,	EC50: =338mg/L (48h, Daphnia magna) EC50: =98mg/L (48h, Daphnia

	EC50: =850mg/L (72h, Desmodesmus subspicatus)	Pimephales promelas) LC50: =830mg/L (96h, Lepomis macrochirus) LC50: >530mg/L (96h, Lepomis macrochirus)	magna)
Mercury chloride (HgCl2)	-	LC50: 0.014 - 0.019mg/L (96h, Oncorhynchus mykiss) LC50: 0.02 - 0.26mg/L (96h, Cyprinus carpio) LC50: 0.096 - 0.133mg/L (96h, Lepomis macrochirus) LC50: 0.1 - 0.182mg/L (96h, Pimephales promelas) LC50: 0.13 - 0.19mg/L (96h, Oncorhynchus mykiss) LC50: 5.933 - 10.34mg/L (96h, Poecilia reticulata) LC50: =0.041mg/L (96h, Poecilia reticulata) LC50: =0.155mg/L (96h, Pimephales promelas) LC50: =0.4mg/L (96h, Lepomis macrochirus) LC50: =4.425mg/L (96h, Cyprinus carpio)	EC50: =0.0015mg/L (48h, Daphnia magna) EC50: >0.012mg/L (48h, Daphnia magna)
Pentachlorophenol	EC50: 0.005 - 0.3mg/L (96h, Pseudokirchneriella subcapitata) EC50: =0.1mg/L (72h, Pseudokirchneriella subcapitata) EC50: =0.183mg/L (72h, Desmodesmus subspicatus)	LC50: 0.031 - 0.038mg/L (96h, Oncorhynchus mykiss) LC50: 0.079 - 0.187mg/L (96h, Pimephales promelas) LC50: 0.102 - 0.128mg/L (96h, Oncorhynchus mykiss) LC50: 0.103 - 0.129mg/L (96h, Lepomis macrochirus) LC50: 0.11 - 0.49mg/L (96h, Pimephales promelas) LC50: 0.170 - 0.3mg/L (96h, Oryzias latipes) LC50: =0.36mg/L (96h, Poecilia reticulata)	EC50: 0.138 - 0.307mg/L (48h, Daphnia magna)
Cadmium chloride	EC50: =3.7mg/L (96h, Chlorella vulgaris)	LC50: =0.0409mg/L (96h, Pimephales promelas)	EC50: 0.012 - 0.054mg/L (48h, Daphnia magna)

Persistence and degradability

Persistence and degradability No information available.

Bioaccumulative potential

Bioaccumulation There is no data for this product.

Chemical name	Partition coefficient
Phenol	1.5
Pentachlorophenol	5.01

Mobility

Mobility in soil No information available.

PBT and vPvB assessment

Chemical name	PBT and vPvB assessment
Trichloroacetic acid	The substance is not PBT / vPvB
Phenol	The substance is not PBT / vPvB
Sodium fluoride	The substance is not PBT / vPvB PBT assessment does

	not apply
Zinc sulfate, monohydrate	The substance is not PBT / vPvB
Selenium dioxide	PBT assessment does not apply
Lead chloride (PbCl2)	PBT assessment does not apply
Copper(2+) chloride dihydrate	The substance is not PBT / vPvB
Aluminum nitrate nonahydrate	PBT assessment does not apply
Chromium(III) chloride hexahydrate	The substance is not PBT / vPvB PBT assessment does not apply
Cadmium chloride	PBT assessment does not apply

Other adverse effects

Other adverse effects No information available

Chemical name	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disrupters - Evaluated Substances	Endocrine disrupting potential
Pentachlorophenol	Group III Chemical	-	-

SECTION 13: Disposal considerations

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

SECTION 14: Transport information

ADR Not regulated

IMDG Not regulated

Transport in bulk according to Annex II of MARPOL and the IBC Code No information available

IATA Not regulated

UN number or ID number 1759

Packing group III

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Singapore

Environmental Protection and Management (Hazardous Substances) Regulations

Verify that licence requirements are met.

Chemical name	Hazardous Substances	transport
Phenol	Exclusions: 1. Preparations containing <1%, weight in weight, of Phenols. 2. Phenols which are intended for the treatment of human ailments and other medical purposes. 3. Soaps for washing. 4. Tar, coal or wood, crude or refined	500kg
Sodium fluoride	Exclusions: 1. Substances containing <=3%, weight in weight, of Sodium	

	fluoride or Sodium silicofluoride as a preservative. 2. Substances containing Sodium fluoride intended for the treatment of human ailments	
Arsenic acid (H3AsO4), disodium salt, heptahydrate	-	50kg
Thallium(I) acetate	Present	
Mercury chloride (HgCl2)	Exclusions: 1. controlled EEE containing Mercury <=0.1% maximum concentration value by weight of homogeneous material in controlled EEE. 2. Cold cathode fluorescent lamp or external electrode fluorescent lamp, used for purposes other than general lighting, that (a) is <=500 mm long and contains <=3.5 mg of Mercury; (b) is >500 mm long but <=1500 mm long and contains <=5 mg of mercury; or (b) >1500 mm long and contains <=13 mg of mercury Present Exclusions: Batteries (including those in button form) containing not more than 0.0005% by weight of mercury per cell.	0kg
Lead chloride (PbCl2)	Exclusions: 1. controlled EEE containing Lead <=0.1% maximum concentration value by weight of homogeneous material in controlled EEE. 2. Lead in glass of cathode ray tube. 3. Lead <=0.2% by weight, in glass of fluorescent tube. 4. Lead <=0.35% by weight, as an alloying element in steel for machining purposes or galvanised steel. 5. Lead <=0.4% by weight, as an alloying element in aluminium. 6. Lead <=4% by weight, in copper alloy. 7. Lead in high melting temperature type solder (that is, lead-based alloy containing >=85% lead by weight). 8. Electrical and electronic component containing Lead in (a) glass or ceramic (other than dielectric ceramic in capacitor); or (b) glass or ceramic matrix compound. 9. Lead in dielectric ceramic in capacitor for rated voltage of >=125 V AC, 250 V DC. 10. Lead in bearing shell or bush for refrigerant-containing compressor for heating, ventilation, air conditioning or refrigeration application. 11. Lead in white glass for optical application. 12. Lead in filter glass or glass used for reflectance standards. 13. Lead in printing ink for the application of enamel on glass. 14. Lead in solder for (a) completing viable electrical connection between semiconductor die and carrier within integrated circuit flip chip package; (b) soldering to machined-through hole discoidal or planar array ceramic multilayer capacitor; (c) soldering thin copper wire (with diameter <= 100 µm) in power transformer. 15. Lead in	

	soldering materials in mercury-free flat fluorescent lamp. 16. Lead oxide in surface conduction electron emitter display used in structural element. 17. Lead bound in crystal glass. 18. Lead in cermet-based trimmer potentiometer element. 18. Lead in plating layer of high-voltage diode on base of zinc borate glass body Exclusions: 1. Lead compounds in paint in which the Lead content is <=0.06% by weight of the paint. 2. Lead compounds in paint in which the container is affixed with an appropriate label. 3. The labels to be used for paints containing Lead compounds are in accordance with Part IV of the Second Schedule	
Pentachlorophenol	Exclusions: Substances containing <=1%, weight in weight, of Chlorophenols	
Cadmium chloride	Exclusions: 1. controlled EEE containing Cadmium <=0.01% maximum concentration value by weight of homogeneous material in controlled EEE. 2. Cadmium and its compounds in electrical contact. 3. Cadmium in filter glass or glass used for reflectance standards. 4. Cadmium in printing ink for the application of enamel on glass. 5. Cadmium alloy as electrical or mechanical solder joint to electrical conductor located directly on voice coil in transducer used in high-powered loudspeaker with sound pressure level of >=100 dB (A). 6. Cadmium and cadmium oxide in thick film paste used on aluminium bonded beryllium oxide	

Environmental Public Health Act
Dispose of waste product or used containers according to local regulations.

Hazardous Waste (Control of Export, Import and Transit) Act
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Take note that wastes may be subject to export, import, or transit controls pursuant to the Basel convention and/or local regulations implementing the Basel convention.

Poison
Verify that licence requirements are met Verify that requirements related to using, handling, and storing substances subject to prohibition, authorisation or restriction are met

Chemical name	Poison	Poison Schedule Number
Phenol	X	Second schedule Fourth schedule
Sodium fluoride	X	First schedule Second schedule Third schedule
Arsenic acid (H3AsO4), disodium salt, heptahydrate	X	
Thallium(I) acetate	X	First schedule Sixth schedule
Lead chloride (PbCl2)		Second schedule Fourth schedule

Strategic Goods (Control) Act
Verify that requirements related to using, handling, and storing substances subject to prohibition, authorisation or restriction are met.

Chemical name	Strategic Goods (Control) Act
Sodium fluoride	1C350

Workplace Safety and Health Act
See section 8 for national exposure control parameters. Comply with the health and safety at work laws.

Pre-employment screening and appropriate health surveillance

Chemical name	Pre-employment screening and appropriate health surveillance
Arsenic acid (H3AsO4), disodium salt, heptahydrate - 10048-95-0	X
Mercury chloride (HgCl2) - 7487-94-7	X
Lead chloride (PbCl2) - 7758-95-4	X
Cadmium chloride - 10108-64-2	X

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants

Chemical name	Annex
Pentachlorophenol - 87-86-5	A

The Rotterdam Convention

Chemical name	Chemicals Subject to Prior Informed Consent (PIC)
Mercury chloride (HgCl2) - 7487-94-7	Rotterdam
Pentachlorophenol - 87-86-5	Rotterdam

International Inventories
Contact supplier for inventory compliance status

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet
Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme

Organisation for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Label elements
P264 - Wash face, hands and any exposed skin thoroughly after handling
P273 - Avoid release to the environment
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P310 - Immediately call a POISON CENTER or doctor
P391 - Collect spillage

Issuing Date	Bio-Rad Laboratories, Environmental Health and Safety
Revision date	11-Jun-2021
Revision Note	Significant changes throughout SDS. Review all sections.

This safety data sheet complies with the requirements of: SS586: 2008 (2014)

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet