Bioland Scientific LLC

Material Safety Data Sheet

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1. PRODUCT AND COMPANY IDENTIFICATION

Product name	**Tris-HEPES-SDS Running Buffer**
Catalog Number	THS01
Brand	Bioland Chemicals
Company	Bioland Scientific LLC 14925 Paramount Blvd., Suite C Paramount, CA 90723 USA
Telephone	1-562-377-2668
Fax	1-562-733-6008
Emergency Phone #	1-562-377-2668

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components

United States

7365-45-9	4-(2-hydroxyethyl)piperazin-1-ylethanesulphonic acid	45-65%
77-86-1	Trometamol	20-25%
151-21-3	Sodium dodecyl Sulphate	7-10%

Canada

77-86-1	Trometamol	20-25%
151-21-3	Sodium dodecyl Sulphate	7-10%

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.

3. HAZARDS IDENTIFICATION

Physical State: Liquid

Signal Word: WARNING!

Hazard Statements:
Harmful, if inhaled or absorbed through the skin. Causes Respiratory tract. Eye and skin irritation. May cause allergic skin reaction. May be harmful if swallowed. Contains material that can cause target organ damage.

Precautionary measures:
Do not breathe in vapors or mist. Do not ingest. Use only with adequate ventilation. Do not eat drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

OSHA/HCS Status:
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910. 1200)

Routes of Entry:
Dermal contact. Eye contact. Inhalation. Ingestion

Potential acute health effects

Inhalation: toxic by inhalation. Irritating to respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion: Harmful if swallowed.

Skin: Toxic in contact with skin. Irritating to skin. May cause sensitization by skin contact.

Eyes: Irritating to eyes.

Potential Chronic Health effects

Chronic effects: Contains material that can cause target organ damage. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Developmental effects: No known significant effects or critical hazards.

Fertility effects: No known significant effects or critical hazards.

Target Organs: Contains material which causes damage to the following organs: Lungs
Contains material which may cause damage to the following organs: kidneys, liver, skin, eyes.

Over-exposure signs/symptoms

Adverse symptoms may include the following:

Inhalation	Respiratory tract irritation, coughing
Ingestion	No specific data
Skin	Irritation, redness
Eyes	Pain or irritation, watering, redness

Medical conditions aggravated by over-exposure: Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

4. FIRST AID MEASURES

Eye contact	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower eyelids. Get medical attention immediately.
Inhalation	Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
Skin contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
Ingestion	Wash out mouth with water. Do not induce vomiting unless directed by a medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Notes to physician	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.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Use an extinguishing agent suitable for surrounding fire

Special Exposure hazards: promptly isolate the scene by removing all the persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk without suitable training.

Hazardous thermal decomposition products: decomposition may include the following materials:

- Carbon dioxide
- Carbon monoxide
- Nitrogen oxides
- Sulfur oxides
- Metal oxide/oxides

Special protective equipment for firefighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: 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 walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (See section 8)

Measures for environmental protection: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air)

Methods for cleaning up: Small spill: 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 inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill: Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect the spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same risk as the spilled product. Note: See section 1 for emergency contact information and section 13 for waste disposal.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment (see section 8). 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. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage: Store between the following temperatures: 20 to 25^{o}C (68-77^{o}F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid contamination.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components with limit values that require monitoring at the workplace:
No exposure limit value known

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering Measures: 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.

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 potential 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.

Personal Protection

Respiratory	Use properly fitted, air-purifying or air fed respirator complying with an approved standard if risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Hands	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.
Eyes	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 or dusts.
Skin	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.
Environmental exposure controls	Emissions from the 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid

pH: 7.75 to 8.25

Solubility: Easily soluble in the following materials: cold water and hot water.

10. STABILITY AND REACTIVITY

Chemical stability: The product is stable.

Conditions to be avoided: No specific data.

Materials to be avoided: No specific data.

Dangerous reactions: Under normal conditions of storage and use, hazardous reactions will not occur.

Dangerous products of decomposition: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXICOLOGICAL INFORMATION

United States
Acute Toxicity

Product/Ingredient name	Result	Species	Dose	Exposure
Sodium dodecyl Sulphate	LC50 inhalation Dusts and mists	Rat	>3900 mg/m^3	1 hours
	LD50 Dermal	Rabbit	580 mg/kg	-
	LD50 Oral	Rat	1288 mg/kg	-

Conclusion/Summary: Not available

Chronic toxicity

Conclusion/summary: Not available

Irritation/Corrosion

Product/Ingredient name	Result	Species	Score	Exposure	Observation
Trometamol	Skin- Moderate irritant	Rabbit	-	25 percent	-
Sodium dodecyl Sulphate	Skin – Severe irritant	Rabbit	-	500 milligrams	-
	Skin- Moderate irritant	Woman	-	1 percent	-
	Eyes-Mild irritant	Rabbit	-	250 micrograms	-
	Eyes – Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes – Moderate irritant	Rabbit	-	10 milligrams	-
	Skin – Mild irritant	Dog	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Guinea Pig	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Human	-	504 hours 0.3percent	-
	Skin – Mild irritant	Human	-	24 hours 0.06 percent	-
	Skin – Mild irritant	Human	-	22 hours 10 percent	-
	Skin – Mild irritant	Human	-	47 hours 0.5 percent	-
	Skin – Mild irritant	Human	-	18 hours 2 percent	-
	Skin- Moderate irritant	Human	-	48 hours 3 percent	-
	Skin- Moderate irritant	Human	-	24 hours 0.1 percent	-
	Skin- Moderate irritant	Mouse	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Pig	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Rabbit	-	24 hours 50 milligrams	-
	Skin- Moderate irritant	Rabbit	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Human	-	2 hours 2 percent	-

Conclusion/Summary: Not available

Sensitizer

Conclusion/summary: Not available

Carcinogenicity

Conclusion/summary: Not available

Classification

Product/Ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
4-(2-hydroxyethyl)piperazin-1-ylethanesulphonic acid	-	-	-	None	-	None
Trometamol	-	-	-	None	-	None
Sodium dodecyl Sulphate	A2	-	-	None	-	None

Mutagenicity
Conclusion/Summary: Not available

Teratogenicity
Conclusion/Summary: Not available

Canada
Acute Toxicity

Product/Ingredient name	Result	Species	Dose	Exposure
Sodium dodecyl Sulphate	LC50 inhalation Dusts and mists LD50 Dermal LD50 Oral	Rat Rabbit Rat	>3900 mg/m^3 580 mg/kg 1288 mg/kg	1 hours - -

Conclusion/Summary: Not available

Chronic toxicity
Conclusion/summary: Not available

Irritation/Corrosion

Product/Ingredient name	Result	Species	Score	Exposure	Observation
Trometamol	Skin- Moderate irritant	Rabbit	-	25 percent	-
Sodium dodecyl Sulphate	Skin – Severe irritant	Rabbit	-	500 milligrams	-
	Skin- Moderate irritant	Woman	-	1 percent	-
	Eyes-Mild irritant	Rabbit	-	250 micrograms	-
	Eyes – Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes – Moderate irritant	Rabbit	-	10 milligrams	-
	Skin – Mild irritant	Dog	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Guinea Pig	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Human	-	504 hours 0.3percent	-
	Skin – Mild irritant	Human	-	24 hours 0.06 percent	-
	Skin – Mild irritant	Human	-	22 hours 10 percent	-
	Skin – Mild irritant	Human	-	47 hours 0.5 percent	-
	Skin – Mild irritant	Human	-	18 hours 2 percent	-
	Skin- Moderate irritant	Human	-	48 hours 3 percent	-
	Skin- Moderate irritant	Human	-	24 hours 0.1 percent	-
	Skin- Moderate irritant	Mouse	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Pig	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Rabbit	-	24 hours 50 milligrams	-
	Skin- Moderate irritant	Rabbit	-	24 hours 25 milligrams	-
	Skin – Mild irritant	Human	-	2 hours 2 percent	-

Conclusion/Summary: Not available

Sensitizer
Conclusion/summary: Not available

Carcinogenicity
Conclusion/summary: Not available

Classification

Product/Ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
4-(2-hydroxyethyl)piperazin-1-ylethanesulphonic acid	-	-	-	None	-	None
Trometamol	-	-	-	None	-	None
Sodium dodecyl Sulphate	A2	-	-	None	-	None

Mutagenicity
Conclusion/Summary: Not available

Teratogenicity
Conclusion/Summary: Not available

Reproductive Toxicity

Product/Ingredient name	Maternal Toxicity	Fertility	Development toxin	Species	Dose	Exposure
Sodium dodecyl Sulphate	-	-	-	Mouse	Dermal: 480 mg/kg	-

Conclusion/Summary: Not available

12. ECOLOGICAL INFORMATION

Ecotoxicity: No known significant effects or critical hazards.

United States

Aquatic Ecotoxicity

Product/Ingredient name	Result	Species	Exposure
Sodium dodecyl Sulphate	Acute EC50 1200 ug/L Marine water Acute LC50 900 ug/L Marine water	Algae-skeletonema costatum Crustaceans – Artemia salina- Adult -25 days – 3.5 to 4.5 mm	96 hours 48 hours
	Acute LC50 1400 ug/L fresh water	Daphnia –Daphnia pulex-Neonate	48 hours
	Acute LC50 590 ug/L fresh water	Fish-Cirrhinus mrigala – Larvae- 2 days – 4.5mm – 51mg	96 hours
	Chronic NOEC 3.2 mg/L fresh water	Daphnia – Daphnia magna – Neonate - <24 hours	21 days
	Chronic NOEC >1357 ug/L fresh water	Fish – Pimphales promelas – 7 days es0:a56s:7pt	42 days

Conclusion/Summary: Not available

Persistence/degradability
Conclusion/Summary: Not available

Canada
Aquatic Ecotoxicity

Product/Ingredient name	Result	Species	Exposure
Sodium dodecyl Sulphate	Acute EC50 1200 ug/L Marine water Acute LC50 900 ug/L Marine water	Algae-skeletonema costatum Crustaceans – Artemia salina- Adult -25 days – 3.5 to 4.5 mm	96 hours 48 hours
	Acute LC50 1400 ug/L fresh water	Daphnia –Daphnia pulex-Neonate	48 hours
	Acute LC50 590 ug/L fresh water	Fish-Cirrhinus mrigala – Larvae- 2 days – 4.5mm – 51mg	96 hours
	Chronic NOEC 3.2 mg/L fresh water	Daphnia – Daphnia magna – Neonate - <24 hours	21 days
	Chronic NOEC >1357 ug/L fresh water	Fish – Pimphales promelas – 7 days es0:a56s:7pt	42 days

Conclusion/Summary: Not available

Persistence/degradability
Conclusion/Summary: Not available

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

13. DISPOSAL CONSIDERATIONS

Waste disposal
The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. 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. 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 empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.
Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. TRANSPORT INFORMATION

Regulatory Information	UN number	Proper shipping	Classes	PG*
DOT Classification	Not regulated	-	-	-
IATA-DGR Class	Not regulated	-	-	-

PG*: Packing group

15. REGULATORY INFORMATION

United States

HCS Classification

Toxic material
Irritating material
Sensitizing material
Target organ effects

US Federal regulations

TSCA 8(a) IUR Exempt/partial exemption: Note determined

United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found
SARA 302/304/311/312 hazardous chemicals: trometamol; 4-(2-hydroxyethyl)piperazin-1-ylethanesulphonic acid; sodium dodecyl Sulphate
SARA 311/312 MSDS distribution – chemical inventory – hazard identification:
Trometamol: Immediate (acute) health hazard; 4-(2-hydroxyethyl)piperazin-1-ylethansulphonic acid: immediate (acute) health hazard; sodium dodecyl Sulphate: immediate (acute) health hazard, delayed (chronic) health hazard

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

Clean Air Act Section 602: Not listed
Class I substances

Clean Air Act Section 602: Not listed
Class II Substances

DEA List I Chemicals: Not listed
(Precursor chemicals)

DEA List II Chemicals: Not listed
(Essential chemicals)

State Regulations

Massachusetts: None of the components are listed
New York: None of the components are listed
New Jersey: None of the components are listed
Pennsylvania: None of the components are listed
United States inventory: None of the components are listed
(TSCA 8b)

Canada

WHMIS (Canada): Class D-2B: Material causing other toxic effects (Toxic)
Canadian lists
Canadian NPRI: None of the components are listed
CEPA toxic substances: None of the components are listed
Canadian inventory: All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

International Regulations

International lists:
Australia inventory (AICS): All components are listed or exempted.
China inventory (IECS): All components are listed or exempted.
Japan inventory: Not determined
Korea inventory: Not determined
New Zealand inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.

16. OTHER INFORMATION

Label Requirements:
HARMFUL IF INHALED OR ABSORBED THROUGH THE SKIN. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERIC SKIN REACTION. MAY BE HARMFUL IF SWALLOWED. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

Hazardous Material

Information system (USA)

Health	2
Flammability	0
Physical hazards	0

The customer is responsible for for determining the PPE code for this material.

National Fire Protection: Association (USA)

Health	2
Flammability	0
Instability/Reactivity	0

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Notice to reader
To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All material may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

End of Safety Data Sheet