SAFETY DATA SHEET

Conforms to regulation (EC) no. EU 453/2010

SECTION 1 - IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Product Name: Protein Loading Buffer Blue 2X **Product Number:** EC-886

1.2 Relevant Identified Uses of the Substance/Mixture and Uses Advised Against

Investigational research by professional users

1.3 Details of the Supplier of the Safety Data Sheet

Manufacturer
National Diagnostics
305 Patton Drive
Atlanta, GA 30036
(404) 699-2121
(800) 526-3867
info@nationaldiagnostics.com

1.4 Emergency Telephone Number

ChemTel Inc.
Contract number MIS8894340
1-800 255-3924 (United States, Canada, Puerto Rico & US Virgin Islands)
01-800-099-0731 (Mexico)
400-120-0751 (China)
000-800-100-4086 (India)
1-300-954-583 (Australia)
0-800-591-6042 (Brazil)
+1-813-255-3924 (All other regions)

SECTION 2 - HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

Classification according to Regulation (EC) No. 1272/2008 [EU-GHS/CLP]
H302 - Acute Toxicity-Oral (Category 4)
H312 - Acute Toxicity-Dermal (Category 4)
H315 - Skin Corrosion/Irritation (Category 2)
H319 - Serious Eye Damage/Eye Irritation (Category 2A)
H332 - Acute Toxicity-Inhalation (Category 4)

2.2 Label Elements

GHS LABEL ELEMENTS AND CLASSIFICATION

GHS Label Elements

WARNING
H302 - Harmful if swallowed
H312 - Harmful in contact with skin.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H332 - Harmful if inhaled.
P262 - Do not get into eyes, on skin or on clothing.
P264 - Wash skin thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician IF you feel unwell.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P304+P341 - IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

2.3 Other Hazards

None found.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixture

Chemical Names/Description
Aqueous solution of tris base, SDS, glycerol, mercaptoethanol, and bromophenyl blue (< 0.1%)

Component List

Component	% Comp.	CAS #	EC #	1278/2008 Classification
2-Mercaptoethanol	2	60-24-2	200-464-6	H301, H310, H315, H317, H318, H331, H373, H400, H410
Tris-Base	1.5	77-86-1	201-064-4	H315, H319, H335

SECTION 4 - FIRST AID MEASURES

4.1 Description of First Aid Measures

Inhalation

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion

Do not induce vomiting. If swallowed and the person is conscious, immediately give large amounts of water. Get medical attention.

Skin

Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes

Immediately flush eyes with plenty of water for at least fifteen minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

Inhalation

2-Mercaptoethanol:
Symptoms may include coughing, sore throat, shortness of breath, headaches, nausea, and vomiting. Prolonged exposure can cause CNS stimulation.

Tris-Base:
Coughing, shortness of breath.

Ingestion

2-Mercaptoethanol:
Symptoms may include sore throat, abdominal pain, and vomiting.

Tris-Base:
Symptoms may include nausea, vomiting, and diarrhea. Large oral doses may cause weakness, collapse, blood clotting, and coma. The estimated lethal dose of Tris Base is 50 grams dry solid.

Skin

2-Mercaptoethanol:
Symptoms may include skin irritation.

Tris-Base:
Redness, itching, and pain.

Eyes

2-Mercaptoethanol:
Symptoms may include redness and pain.

Tris-Base:
Redness, itching, and pain.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

Unknown/not applicable

SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use media appropriate to the primary cause of fire.

5.2 Special Hazards Arising from the Substance/Mixture

Hazardous Combustion Products

Thermal decomposition products may include toxic oxides of nitrogen, sulfur, and carbon.

Hazardous Decomposition Products

Toxic gases may be involved in a fire. Glycerin decomposes upon headting above 290C, forming corrosive gas (acrolein).

Hazardous Polymerization

Will not occur under normal conditions of use (See Sections 10.4 & 10.5).

5.3 Advice for Firefighters

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

5.4 Further Information
No data available.

SECTION 6 - ACCIDENTAL RELEASE MEASURES
6.1 Personal Precautions
Wear appropriate protective equipment as specified in Section 8.

6.2 Environmental Precautions
Prevent discharge into the environment. Dike spills and stop leakage where practical. Do not allow material to enter drains.

6.3 Methods and Materials for Containment and Cleaning Up
Contain and clean up spill immediately, prevent from entering floor drains. Contain liquids using absorbents. Shovel all spill materials into disposal drum. Scrub spill area with detergent, flush with copious amounts of water.

6.4 References to Other Sections
For disposal information, see Section 13. For protective clothing and equipment, see Section 8.

SECTION 7 - HANDLING AND STORAGE
7.1 Precautions for Safe Handling
Avoid contact and inhalation. Do not get in eyes, on skin, on clothing. Wash thoroughly after handling.

7.2 Conditions for Safe Storage (including any incompatibles)
Keep frozen until ready to use. Protect from physical damage. Isolate from incompatible materials (section 10).

Incompatibles

2-Mercaptoethanol:
Oxidizing agents, moisture, Avoid contact with metals.

Tris-Base:
No incompatibility data found.

7.3 Specific End Uses
Investigational research by professional users

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PRECAUTIONS
8.1 Control Parameters
Component: 2-Mercaptoethanol
ACGIH Threshold Limit Value (TLV): Not Established
OSHA Permissable Exposure Limit (PEL): AIHA WEEL 0.2ppm, 8 hr. TWA

Component: Tris-Base
ACGIH Threshold Limit Value (TLV): none established
OSHA Permissable Exposure Limit (PEL): none established

8.2 Exposure Controls
Engineering Controls
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source.

Respiratory Protection
If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.

Eye Protection
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Skin Protection
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES
9.1 Information on Basic Physical & Chemical Properties

a. Appearance	Clear, blue solution	**b. Odor**	Rotten egg odor
c. Odor Threshold	1 mg/m^3 (mercaptan)	**d. pH**	6.8
e. Melting/Freezing Point (^{o}C)	-5	**f. Boiling point (^{o}C)**	104.4
g. Flash Point (^{o}C)	N.A.	**h. Evaporation Rate**	Water

i. Flammability	N.A.	**j. Upper/Lower Flammability or Explosive Limits**	N.A.
k. Vapor Pressure	Water	**l. Vapor Density (Air = 1)**	Water
m. Relative Density	No information.	**n. Water Solubility**	Soluble
o. Partition Coefficient n-octanol/water	Mixture	**p. Autoignition Temperature (^{o}C)**	N.A.
q. Decomposition Temperature (^{o}C)	N.A.	**r. Viscosity**	No data available.
s. Explosive Properties	N.A.	**t. Oxidizing Properties**	Not an oxidizer

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity

Contains a reducing agent

10.2 Chemical Stability

Stable under ordinary conditions of use and storage. (Keep frozen until ready to use).

10.3 Possibility of Hazardous Reactions

Will not occur under normal conditions of use (See Sections 10.4 & 10.5).

10.4 Conditions to Avoid

Heat, incompatibles.

10.5 Incompatible Materials

2-Mercaptoethanol:

Oxidizing agents, moisture, Avoid contact with metals.

Tris-Base:

No incompatibility data found.

10.6 Hazardous Decomposition Products

Toxic gases may be involved in a fire. Glycerin decomposes upon headting above 290C, forming corrosive gas (acrolein).

SECTION 11 - TOXICOLOGICAL INFORMATION

Product LD50 Values

Oral Rat LD50 (mg/kg)

12200

Dermal Rabbit LD50 (mg/kg)

7500

Component Cancer List Status

	NTP Carcinogen		
	Known	**Anticipated**	**IARC Category**
2-Mercaptoethanol	No	No	None
Tris-Base	No	No	None

Potential Health Effects

Inhalation

2-Mercaptoethanol

Vapors irritate the mucous membranes and respiratory tract.

Tris-Base

Causes irritation to the respiratory tract.

Ingestion

2-Mercaptoethanol

Toxic. Harmful if swallowed. Sore throat, abdominal pain and vomiting may occur.

Tris-Base

Causes irritation and reddening to the mucous membranes of the mouth, esophagus, and gastrointestinal tract.

Skin

2-Mercaptoethanol

Toxic. Causes skin irritation and may be absorbed in the body in toxic quantities.

Tris-Base

Causes irritation to the skin.

Eyes

2-Mercaptoethanol
Vapors irritate the eyes with redness and pain. Splashes may cause severe irritation.

Tris-Base
Causes irritation to the eyes.

Carcinogenicity
2-Mercaptoethanol
Substance is neither a known nor an anticipated carcinogen. Not listed by NTP, IARC, or OSHA.

Tris-Base
Not listed as a carcinogen by NTP or IARC.

Mutagenicity
2-Mercaptoethanol
No information available.

Tris-Base
No information found.

Reproductive Toxicity
2-Mercaptoethanol
No information available.

Tris-Base
No information found.

Teratogenic Effects
2-Mercaptoethanol
No information available.

Tris-Base
No information found.

Routes of Entry
2-Mercaptoethanol
Toxic effects possible by inhalation, ingestion, and skin absorption.

Tris-Base
Ingestion.

Target Organ Statement
2-Mercaptoethanol
Behavioral: Tremor, convulsion, excitement, muscle contraction/spasticity. Lungs, thorax: Respiratory depression. GI: Changes in structure/function of salivary glands.

Tris-Base
No information available.

SECTION 12 - ECOLOGICAL INFOMATION
12.1 Toxicity
COMPONENT: 2-Mercaptoethanol

	Vertebrates	Invertebrates	Algae	Microorganisms
Aquatic Toxicity (ppm unless otherwise noted)	LC50 (96hr, golden orfe) 37 mg/L	EC50 (daphnia, 48 hr) 0.4 mg/L	LC50 (96h) : 19 mg/L	EC50 (17 h) : 113 mg/l

	Birds	Arthropods	Plants	Microorganisms
Terrestrial Environment Toxicity (ppm unless otherwise noted)	No data	No data	No data	No data

COMPONENT: Tris-Base

	Vertebrates	Invertebrates	Algae	Microorganisms
Aquatic Toxicity (ppm unless otherwise noted)	LC50 460mg/l (Golden ide)	EC50: 59.8 mg/L (Daphnia)	EC50: 473mg/l @ 48 hrs	CE50>1000mg/L (3hrs)

	Birds	Arthropods	Plants	Microorganisms
Terrestrial Environment Toxicity (ppm unless otherwise noted)	No data	No data	No data	No data

12.2 Persistence and Degradability
2-Mercaptoethanol
Biodegradable (90% in 28 days)

Tris-Base
Readily Biodegradable (>97% degradation at 28 days)

12.3 Bioaccumulative Potential

2-Mercaptoethanol
No data

Tris-Base
No data

12.4 Mobility in Soil

2-Mercaptoethanol
Koc 1.325

Tris-Base
Log Koc 1.57-1.85

12.5 Results of PBT and vPvB Assessment

2-Mercaptoethanol
Not a PBT or vPvB

Tris-Base
Not a PBT or vPvB

12.6 Other Adverse Effects

2-Mercaptoethanol
None

Tris-Base
None

SECTION 13 - DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

Offer surplus or non-recyclable product to licensed disposal company. Disposal is subject to user compliance with applicable law and product characteristics at time of disposal. Dispose of packaging as product.

SECTION 14 - TRANSPORT INFORMATION

	ADR/RID	IATA	IMO	DOT
14.1 UN Number	N.A.	N.A.	N.A.	N.A.
14.2 Shipping Name	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.3 Hazard Class	N.A.	N.A.	N.A.	N.A.
14.4 Packing Group	N.A.	N.A.	N.A.	N.A.
14.5 Environmental Hazards	N.A.	N.A.	N.A.	N.A.
14.6 Special Precautions	N.A.	N.A.	N.A.	N.A.

SECTION 15 - REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance/Mixture

United States

TSCA Regulatory Statement
All intentional ingredients are listed on the TSCA Inventory.

SARA 311/312 Hazard Categories

Component	Fire	Pressure	Reactivity	Acute	Chronic
2-Mercaptoethanol	Yes	No	No	Yes	No
Tris-Base	No	No	No	Yes	No

Europe

EEC Regulatory
All intentional ingredients are listed on the European EINECS Inventory.

SECTION 16 - OTHER INFORMATION

Revisional Updates

4/26/2019 - Updated Section 1.4
5/29/2015 - Updated Sections 2.1 and 3.2
7/10/2013 - Released Version 1.0

NFPA Codes

Health N.D. **Flammability** N.D. **Reactivity** N.D.

Dangers

2-Mercaptoethanol
H301 - Toxic if swallowed

H310 - Fatal in contact with skin.
H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H318 - Causes serious eye damage.
H331 - Toxic if inhaled.
H373 - May cause damage to organs through prolonged or repeated exposure.
H401 - Toxic to aquatic life.
H410 - Very toxic to aquatic life with long lasting effects.

Tris-Base
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.

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