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: Tris-Glycine Electroblotting Buffer 10X **Product Number:** EC-880

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)
H313 - Acute Toxicity-Dermal (Category 5)
H333 - Acute Toxicity-Inhalation (Category 5)

2.2 Label Elements

GHS LABEL ELEMENTS AND CLASSIFICATION

GHS Label Elements

WARNING
H302 - Harmful if swallowed
H313 - May be harmful in contact with skin.
H333 - May be harmful if inhaled.
P264 - Wash skin thoroughly after handling.
P301+P312 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician IF you feel unwell.
P304+312 - IF INHALED: Immediately call a POISON CENTER or doctor/physician IF you feel unwell.

2.3 Other Hazards

None found.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixture

Chemical Names/Description
Transfer Buffer Concentrate

Component List

Component	% Comp.	CAS #	EC #	1278/2008 Classification
Methanol	5	67-56-1	200-659-6	H225, H301, H311, H331, H371
Tris-Base	3	77-86-1	201-064-4	H315, H319, H335
Glycine	14.4	56-40-6	200-272-2	N.A.

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

Call a physician immediately if significant amounts have been swallowed. Give large amounts of water or milk to drink for dilution effect. Do not induce vomiting.

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

Methanol:
Irritation of the respiratory tract and mucous membranes. For central nervous system symptoms which may occur due to exposure by inhalation, see Ingestion.

Tris-Base:
Coughing, shortness of breath.

Glycine:
Coughing, soreness in the respiratory tract, chest tightening, difficulty breathing.

Ingestion

Methanol:
Effects may include excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death.

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.

Glycine:
Nausea.

Skin

Methanol:
Exposure may cause symptoms similar to those listed under Ingestion.

Tris-Base:
Redness, itching, and pain.

Glycine:
Mild reddening.

Eyes

Methanol:
Irritation, redness, pain, and inflammation.

Tris-Base:
Redness, itching, and pain.

Glycine:
Mild reddening.

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 and carbon.

Hazardous Decomposition Products

Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.

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 in a tightly closed container, stored in a cooled, dry, ventilated area.

Incompatibles
Methanol:
Acetyl bromide, calcium carbide, chlorine, chromic anhydride, cyanuric chloride, dichloromethane, diethyl zinc, lead perchlorate, magnesium, metals, strong oxidizers, perchloric acid, phosphorous trioxide, potassium, sodium hypochlorite, sulfuric acid and zinc.

Tris-Base:
No incompatibility data found.

Glycine:
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: Methanol
ACGIH Threshold Limit Value (TLV): 200 ppm
OSHA Permissable Exposure Limit (PEL): None established

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

Component: Glycine
ACGIH Threshold Limit Value (TLV): 15 mg/m3
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 low. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source.

Respiratory Protection
For conditions of use where exposure to the dust or mist is apparent, a full-face dust/mist respirator may be worn. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator.

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 protective gloves and clean body covering clothing.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical & Chemical Properties

a. Appearance	Clear, colorless solution	**b. Odor**	None
c. Odor Threshold	N.A.	**d. pH**	8.0
e. Melting/Freezing Point (^{o}C)	0	**f. Boiling point (^{o}C)**	104.4
g. Flash Point (^{o}C)	>98	**h. Evaporation Rate**	1.0
i. Flammability	N.A.	**j. Upper/Lower Flammability or Explosive Limits**	N.A.
k. Vapor Pressure	Water	**l. Vapor Density (Air = 1)**	N.A.
m. Relative Density	1.05	**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**	N.A.

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity
Not reactive under normal conditions of use and storage.

10.2 Chemical Stability
Stable under ordinary conditions of use and storage.

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
Methanol:
Acetyl bromide, calcium carbide, chlorine, chromic anhydride, cyanuric chloride, dichloromethane, diethyl zinc, lead perchlorate, magnesium, metals, strong oxidizers, perchloric acid, phosphorous trioxide, potassium, sodium hypochlorite, sulfuric acid and zinc.

Tris-Base:
No incompatibility data found.

Glycine:
No incompatibility data found.

10.6 Hazardous Decomposition Products
Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.

SECTION 11 - TOXICOLOGICAL INFORMATION

Product LD50 Values
Oral Rat LD50 (mg/kg)
> 5000

Dermal Rabbit LD50 (mg/kg)
> 5000

Component Cancer List Status

	NTP Carcinogen		
	Known	**Anticipated**	**IARC Category**
Methanol	No	No	None
Tris-Base	No	No	None
Glycine	No	No	None

Potential Health Effects
Inhalation
Methanol

May irritate the respiratory tract and mucuous membranes. Exposure may cause central nervous system symptoms similar to those listed under Ingestion.

Tris-Base
Causes irritation to the respiratory tract.

Glycine
High concentrations of dust may be slightly irritating to the lungs.

Ingestion
Methanol
Primary toxic effects are metabolic acidosis and visual system damage. Visual system damage may progress from visual blurring to complete blindness. May cause harmful central nervous system effects which may be delayed.

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

Glycine
Large oral doses may cause nausea.

Skin
Methanol
Absorption from prolonged or massive skin contact may cause poisoning. Repeated or prolonged contact may result in defatting, redness, itching, inflammation, cracking and possible secondary infection. Exposure may cause symptoms similar to those listed under ingestion.

Tris-Base
Causes irritation to the skin.

Glycine
May cause mild irritation to the skin.

Eyes
Methanol
Exposure to liquid, vapors, fumes or mists may cause irritation. Direct contact may cause irritation, pain, corneal inflammation and possible corneal damage.

Tris-Base
Causes irritation to the eyes.

Glycine
May cause mild irritation to the eyes.

Carcinogenicity
Methanol
This component is not listed as a carcinogen by NTP or IARC.

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

Glycine
According to definitions of the U.S. Hazard Communication Standard and the Canadian WHMIS Regulation, this material is not listed on the NTP, IARC, ACGIH, or OSHA carcinogen lists, and there are no studies implicating components as cancer causing agents in humans or animals.

Mutagenicity
Methanol
No information available.

Tris-Base
No information found.

Glycine
No information found.

Reproductive Toxicity
Methanol
Possible reproductive hazard.

Tris-Base
No information found.

Glycine
No information found.

Teratogenic Effects
Methanol

No information available.

Tris-Base
No information found.

Glycine
No information found.

Routes of Entry

Methanol
Inhalation, ingestion, or skin contact.

Tris-Base
Ingestion.

Glycine
Inhalation of dust.

Target Organ Statement

Methanol
Chronic intoxication may cause degenerative changes in liver, kidneys, brain, gastrointestinal tract, and heart muscle. Persons with pre-existing liver impairment, skin and respiratory disorders may be at an increased risk from exposure.

Tris-Base
No information available.

Glycine
Persons with pre-existing skin or lung disorders may be more susceptible to irritation effects.

SECTION 12 - ECOLOGICAL INFOMATION

12.1 Toxicity

COMPONENT: Methanol

	Vertebrates	Invertebrates	Algae	Microorganisms
Aquatic Toxicity (ppm unless otherwise noted)	LC50 (96hr, bluegill) 15400 mg/L	EC50 (48 hr, daphnia) > 10000 mg/L	EC50 (96 hr) 22000 mg/L	IC50 (3hr) > 1000 mg/L

	Birds	Arthropods	Plants	Microorganisms
Terrestrial Environment Toxicity (ppm unless otherwise noted)	IC50 (3 day, sativa) 41000 mg/L	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

COMPONENT: Glycine

	Vertebrates	Invertebrates	Algae	Microorganisms
Aquatic Toxicity (ppm unless otherwise noted)	No data	No data	No data	No data

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

12.2 Persistence and Degradability

Methanol
Readily biodegradable (95% elimination in 20 days)

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

Glycine
No data

12.3 Bioaccumulative Potential

Methanol
BCF<10

Tris-Base

No data

Glycine
No data

12.4 Mobility in Soil

Methanol
Koc <1

Tris-Base
Log Koc 1.57-1.85

Glycine
No data

12.5 Results of PBT and vPvB Assessment

Methanol
not PBT or vPvB

Tris-Base
Not a PBT or vPvB

Glycine
No data

12.6 Other Adverse Effects

Methanol
None

Tris-Base
None

Glycine
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
Methanol	Yes	No	No	Yes	Yes
Tris-Base	No	No	No	Yes	No
Glycine	No	No	No	No	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
8/20/2013- Released Version 1.0

NFPA Codes

Health 2 **Flammability** 0 **Reactivity** 0

Dangers

Methanol

H225 - Highly flammable liquid and vapor.
H301 - Toxic if swallowed
H311 - Toxic in contact with skin.
H331 - Toxic if inhaled.
H371 - May cause damage to organs.

Tris-Base

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

Glycine

None

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