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-SDS PAGE Buffer (10X) **Product Number:** EC-870

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	Agent
National Diagnostics	AGTC Bioproducts
305 Patton Drive	Unit 4 Fleet Business Park
Atlanta, GA 30036	Itlings Lane, Hessle
(404) 699-2121	East Riding of Yorkshire HU139LX
(800) 526-3867	44(0) 1482 646020
info@nationaldiagnostics.com	office@agtcbioproducts.com

1.4 Emergency Telephone Number

Chemtrec
1-800 424-9300 (U.S. & Canada)
01-703-527-3887 (outside U.S. & Canada)

SECTION 2 - HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

Classification according to Regulation (EC) No. 1272/2008 [EU-GHS/CLP]

H315 - Skin Corrosion/Irritation (Category 2)
H320 - Serious Eye Damage/Eye Irritation (Category 2B)
H335 - Specific Target Organ Toxicity, Single Exposure (Category 3)

2.2 Label Elements

GHS LABEL ELEMENTS AND CLASSIFICATION

GHS Label Elements

WARNING
H315 - Causes skin irritation.
H320 - Causes eye irritation.
H335 - May cause respiratory irritation.
P260 - Do not breathe dust/fumes/gas/mist/vapors/spray.
P264 - Wash skin thoroughly after handling.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P308+P313 - IF exposed or concerned: Call a POISON CENTER or doctor/physician.

2.3 Other Hazards

None found.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixture

Chemical Names/Description

Aqueous solution of tris base, glycine, and sodium dodecyl sulfate

Component List

Component	% Comp.	CAS #	EC #	1278/2008 Classification
Tris-Base	3	77-86-1	201-064-4	H315, H319, H335
Glycine	14.4	56-40-6	200-272-2	N.A.
SDS	1	151-21-3	205-788-1	H302, 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
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
Tris-Base:
Coughing, shortness of breath.

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

SDS:
Coughing, shortness of breath. May cause allergic reaction in sensitive individuals.

Ingestion
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.

SDS:
Nausea and diarrhea.

Skin
Tris-Base:
Redness, itching, and pain.

Glycine:
Mild reddening.

SDS:
Causes dryness and a rash on continued exposure.

Eyes
Tris-Base:
Redness, itching, and pain.

Glycine:
Mild reddening.

SDS:
Causes redness 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 and carbon.

Hazardous Decomposition Products

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

Hazardous Polymeriation

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

Tris-Base:

No incompatibility data found.

Glycine:

No incompatibility data found.

SDS:

Strong oxidizers, acids.

7.3 Specific End Uses

Investigational research by professional users

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PRECAUTIONS

8.1 Control Parameters

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

Component: SDS

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 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)	N.A.	**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

Tris-Base:

No incompatibility data found.

Glycine:

No incompatibility data found.

SDS:

Strong oxidizers, acids.

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)

No Data

Component Cancer List Status

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

Potential Health Effects

Inhalation

Tris-Base

Causes irritation to the respiratory tract.

Glycine

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

SDS

Dust causes irritation to the respiratory tract.

Ingestion

Tris-Base

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

Glycine

Large oral doses may cause nausea.

SDS

Large doses may cause gastrointestinal distress.

Skin

Tris-Base

Causes irritation to the skin.

Glycine

May cause mild irritation to the skin.

SDS

Mildly irritating to skin. May cause allergic skin reactions.

Eyes

Tris-Base

Causes irritation to the eyes.

Glycine

May cause mild irritation to the eyes.

SDS

Causes irritation to the eyes.

Carcinogenicity

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.

SDS

Not listed as a known or suspected carcinogen by NTP or IARC.

Mutagenicity

Tris-Base

No information found.

Glycine

No information found.

SDS

Has caused mutagenic effects on laboratory animals.

Reproductive Toxicity

Tris-Base

No information found.

Glycine

No information found.

SDS
Has caused mutagenic effects on laboratory animals.

Teratogenic Effects

Tris-Base
No information found.

Glycine
No information found.

SDS
No information found.

Routes of Entry

Tris-Base
Ingestion.

Glycine
Inhalation of dust.

SDS
No information found.

Target Organ Statement

Tris-Base
No information available.

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

SDS
Persons with pre-existing skin disorders or impaired respiratory function may be more susceptible to the effects of the substance.

SECTION 12 - ECOLOGICAL INFOMATION

12.1 Toxicity

COMPONENT: Tris-Base

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

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

COMPONENT: SDS

	Vertebrates	Invertebrates	Algae	Microorganisms
Aquatic Toxicity (ppm unless otherwise noted)	The 96 hr LC50 of dodecyl sulfate to Fathead minnows was 29 mg/L	LC50 (Ceriodaphnia dubia, 48-hr): 5.55 mg/L	EC50>120mg/L	IC50 (3 hrs): 480 mg/L

	Birds	Arthropods	Plants	Microorganisms
Terrestial Environment Toxicity (ppm unless otherwise noted)	No data	No data	EC50 (72hr, Cicer arietinum) 361 mg/L	No data

12.2 Persistence and Degradability

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

Glycine
No data

SDS
Readily biodegradable (>95% degradation in 28 days)

12.3 Bioaccumulative Potential

Tris-Base
No data

Glycine
No data

SDS
No data

12.4 Mobility in Soil

Tris-Base
Log Koc 1.57-1.85

Glycine
No data

SDS
Log Koc 1.545

12.5 Results of PBT and vPvB Assessment

Tris-Base
Not a PBT or vPvB

Glycine
No data

SDS
Not PBT vPvB

12.6 Other Adverse Effects

Tris-Base
None

Glycine
None

SDS
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
Tris-Base	No	No	No	Yes	No

Glycine	No	No	No	No	No
SDS	No	No	No	Yes	Yes

Europe

EEC Regulatory

All intentional ingredients are listed on the European EINECS Inventory.

SECTION 16 - OTHER INFORMATION

Revisional Updates

5/29/2015 - Updated Sections 2.1 and 3.2
8/20/2013- Released Version 1.0

NFPA Codes

Health 1 **Flammability** 0 **Reactivity** 0

Dangers

Tris-Base

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

Glycine

None

SDS

H302 - Harmful if swallowed
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.

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