# 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:** ProtoGel Quick-Cast Loading Buffer (2X) **Product Number:** EC-896

### 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.
P260 - Do not breathe dust/fumes/gas/mist/vapors/spray.
P264 - Wash skin thoroughly after handling.
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, glyerol, mercaptoethanol and proteins.

### Component List

| Component | % Comp. | CAS # | EC # | 1278/2008 |
|---|---|---|---|---|

| | | | | Classification |
|---|---|---|---|---|
| SDS | 4 | 151-21-3 | 205-788-1 | H302, H315, H319, H335 |
| Glycerol | 20 | 56-81-5 | 200-289-5 | N.A. |
| Tris-Base | 2.52 | 77-86-1 | 201-064-4 | H315, H319, H335 |
| 2-Mercaptoethanol | 2 | 60-24-2 | 200-464-6 | H301, H310, H315, H317, H318, H331, H373, H400, H410 |

# 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

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

**Glycerol:**
Inhalation symptoms unlikely.

**Tris-Base:**
Coughing, shortness of breath.

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

### Ingestion

**SDS:**
Nausea and diarrhea.

**Glycerol:**
Nausea, headache, diarrhea.

**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.

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

### Skin

**SDS:**
Causes dryness and a rash on continued exposure.

**Glycerol:**
Irritation.

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

**2-Mercaptoethanol:**
Symptoms may include skin irritation.

### Eyes

**SDS:**
Causes redness and pain.

**Glycerol:**
Irritation.

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

**2-Mercaptoethanol:**
Symptoms may include 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**
N.A.

**Hazardous Decomposition Products**
Phosphorus oxides may form when heated to decomposition.

**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
Cover with dry lime or soda ash, pick up, keep in a closed conntainer and hold for waste disposal.

### 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**
**SDS:**
Strong oxidizers, acids.

**Glycerol:**
Strong oxidizers. Can react violently with acetic anhydride, calcium oxychloride, chromium oxides and alkali metal hydrides.

**Tris-Base:**
No incompatibility data found.

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

### 7.3 Specific End Uses
Investigational research by professional users

## SECTION 8 - EXPOSURE CONTROLS/PERSONAL PRECAUTIONS
### 8.1 Control Parameters
**Component: SDS**
**ACGIH Threshold Limit Value (TLV):** none established

**OSHA Permissable Exposure Limit (PEL):** None established

**Component: Glycerol**
**ACGIH Threshold Limit Value (TLV):** 10 mg/m3
**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: 2-Mercaptoethanol**
**ACGIH Threshold Limit Value (TLV):** Not Established
**OSHA Permissable Exposure Limit (PEL):** AIHA WEEL 0.2ppm, 8 hr. TWA

### 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 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** | Blue solution | **b. Odor** | Mercaptan |
| **c. Odor Threshold** | N.A. | **d. pH** | No data |
| **e. Melting/Freezing Point ($^{o}$C)** | 0 | **f. Boiling point ($^{o}$C)** | 158 (316 F) |
| **g. Flash Point ($^{o}$C)** | No data | **h. Evaporation Rate** | No data |
| **i. Flammability** | N.A. | **j. Upper/Lower Flammability or Explosive Limits** | No data |
| **k. Vapor Pressure** | Water | **l. Vapor Density (Air = 1)** | 3.4 |
| **m. Relative Density** | No data | **n. Water Solubility** | Miscible in Water |
| **o. Partition Coefficient n-octanol/water** | Mixture | **p. Autoignition Temperature ($^{o}$C)** | No data |
| **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- will react with oxidizers.

### 10.2 Chemical Stability
Stable under recommended conditions of use and storage. Substance can supercool without crystalizing.

### 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
Incompatibles.

### 10.5 Incompatible Materials
**SDS:**
Strong oxidizers, acids.

**Glycerol:**
Strong oxidizers. Can react violently with acetic anhydride, calcium oxychloride, chromium oxides and alkali metal hydrides.

**Tris-Base:**
No incompatibility data found.

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

### 10.6 Hazardous Decomposition Products
Phosphorus oxides may form when heated to decomposition.

## SECTION 11 - TOXICOLOGICAL INFORMATION
### Product LD50 Values
#### Oral Rat LD50 (mg/kg)
76500

#### Dermal Rabbit LD50 (mg/kg)
No data

### Component Cancer List Status

| | NTP Carcinogen | | |
|---|---|---|---|
| | Known | Anticipated | IARC Category |
| SDS | No | No | None |
| Glycerol | No | No | None |
| Tris-Base | No | No | None |
| 2-Mercaptoethanol | No | No | None |

### Potential Health Effects
#### Inhalation
**SDS**
After solvent evaporation, SDS dust causes irritation to the respiratory tract.

**Glycerol**
Due to the low vapor pressure, inhalation of the vapors at room temperatures in unlikely. Inhalation of mist may cause irritation of respiratory tract.

**Tris-Base**
Causes irritation to the respiratory tract.

**2-Mercaptoethanol**
Vapors irritate the mucous membranes and respiratory tract.

#### Ingestion
**SDS**
Large doses may cause gastrointestinal distress.

**Glycerol**
Low toxicity. May cause nausea, headache, diarrhea.

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

**2-Mercaptoethanol**
Toxic. Harmful if swallowed. Sore throat, abdominal pain and vomiting may occur.

#### Skin
**SDS**
Mildly irritating to skin. May cause allergic skin reactions.

**Glycerol**
May cause irritation.

**Tris-Base**
Causes irritation to the skin.

**2-Mercaptoethanol**
Toxic. Causes skin irritation and may be absorbed in the body in toxic quantities.

#### Eyes
**SDS**
Causes irritation to the eyes.

**Glycerol**
May cause irritation.

**Tris-Base**
Causes irritation to the eyes.

**2-Mercaptoethanol**

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

## Carcinogenicity

**SDS**

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

**Glycerol**

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.

**Tris-Base**

Not listed as a carcinogen by NTP or IARC.

**2-Mercaptoethanol**

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

## Mutagenicity

**SDS**

Has caused mutagenic effects on laboratory animals.

**Glycerol**

No information found.

**Tris-Base**

No information found.

**2-Mercaptoethanol**

No information available.

## Reproductive Toxicity

**SDS**

Has caused mutagenic effects on laboratory animals.

**Glycerol**

No information found.

**Tris-Base**

No information found.

**2-Mercaptoethanol**

No information available.

## Teratogenic Effects

**SDS**

No information found.

**Glycerol**

No information found.

**Tris-Base**

No information found.

**2-Mercaptoethanol**

No information available.

## Routes of Entry

**SDS**

No information found.

**Glycerol**

No information found.

**Tris-Base**

Ingestion.

**2-Mercaptoethanol**

Toxic effects possible by inhalation, ingestion, and skin absorption.

## Target Organ Statement

**SDS**

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

**Glycerol**

Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of this

substance.

**Tris-Base**
No information available.

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

## SECTION 12 - ECOLOGICAL INFOMATION

### 12.1 Toxicity

**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 |
|---|---|---|---|---|
| Terrestrial Environment Toxicity (ppm unless otherwise noted) | No data | No data | EC50 (72hr, Cicer arietinum ) 361 mg/L | No data |

**COMPONENT: Glycerol**

| | Vertebrates | Invertebrates | Algae | Microorganisms |
|---|---|---|---|---|
| Aquatic Toxicity (ppm unless otherwise noted) | No data | No data | EC3 : >10,000 mg/L | EC50 (16hrs) > 10000 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 (Goldenide) | 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: 2-Mercaptoethanol**

| | Vertebrates | Invertebrates | Algae | Microorganisms |
|---|---|---|---|---|
| Aquatic Toxicity (ppm unless otherwise noted) | LC50 (96hr, goldenorfe) 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 |

### 12.2 Persistence and Degradability

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

**Glycerol**
Readily biodegradable

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

**2-Mercaptoethanol**
Biodegradable (90% in 28 days)

### 12.3 Bioaccumulative Potential

**SDS**
No data

**Glycerol**
No data

**Tris-Base**
No data

**2-Mercaptoethanol**

No data

### 12.4 Mobility in Soil

**SDS**
Log Koc 1.545

**Glycerol**
No data

**Tris-Base**
Log Koc 1.57-1.85

**2-Mercaptoethanol**
Koc 1.325

### 12.5 Results of PBT and vPvB Assessment

**SDS**
Not PBT vPvB

**Glycerol**
Not PBT or vPvB

**Tris-Base**
Not a PBT or vPvB

**2-Mercaptoethanol**
Not a PBT or vPvB

### 12.6 Other Adverse Effects

**SDS**
None

**Glycerol**
None

**Tris-Base**
None

**2-Mercaptoethanol**
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** | UN1805 | UN1805 | UN1805 | UN1805 |
| **14.2 Shipping Name** | PHOSPHORIC ACID | PHOSPHORIC ACID, LIQUID | PHOSPHORIC ACID | PHOSPHORIC ACID |
| **14.3 Hazard Class** | 8 | 8 | 8 | 8 |
| **14.4 Packing Group** | III | III | III | III |
| **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 |
|---|---|---|---|---|---|
| SDS | No | No | No | Yes | Yes |
| Glycerol | No | No | No | Yes | Yes |
| Tris-Base | No | No | No | Yes | No |
| 2-Mercaptoethanol | Yes | 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
1/27/2014 - Released Version 1.0

### NFPA Codes

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

### Dangers

**SDS**

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

**Glycerol**

None

**Tris-Base**

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

**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.