

SAFETY DATA SHEET

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

1.1 Product Identifier

Product Name: UreaGel Buffer

Product Number: EC-835

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

Agent

AGTC Bioproducts
Unit 4 Fleet Business Park
Itlings Lane, Hessle
East Riding of Yorkshire HU139LX
44(0) 1482 646020
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

Solution of urea and buffer salts. Other ingredients are less than 1%.

Component List

Component	% Comp.	CAS #	EC #	1278/2008 Classification
Urea	40-50	57-13-6	200-315-5	N.A.
Boric Acid	< 5.5	10043-35-3	233-139-2	H360
Tris-Base	10-20	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

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician.

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

Urea:

Symptoms may include coughing, shortness of breath. May be absorbed into the bloodstream with symptoms similar to ingestion.

Boric Acid:

May be absorbed from the mucous membranes of the respiratory tract, and depending on the amount of exposure could result in symptoms paralleling ingestion.

Tris-Base:

Coughing, shortness of breath.

Ingestion

Urea:

Symptoms may include nausea, vomiting, and diarrhea. May also cause headache, confusion and electrolyte depletion.

Boric Acid:

Depending on the amount of exposure, ingestion could result in the development of nausea, vomiting, diarrhea, drowsiness, rash, headache, fall in body temperature, low blood pressure, renal injury, cyanosis, coma, and death. Adult fatal dose reported at 5 to > 30 grams.

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

Urea:

Symptoms include redness, itching, and pain.

Boric Acid:

Symptoms of skin absorption parallel inhalation and ingestion.

Tris-Base:

Redness, itching, and pain.

Eyes

Urea:

Redness, itching and pain.

Boric Acid:

Redness, itching 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 and carbon.

Hazardous Decomposition Products

Urea decomposes upon heating and can form products including ammonia, oxides of nitrogen, cyanuric acid, cyanic acid, biuret, and carbon dioxide. Boric acid loses chemically combined water upon heating, forming metaboric acid (HBO₂) at 212 - 221F, then pyroboric acid (H₂B₄O₇) at 285-320F, and Boric anhydride at higher temperatures. The burning of tris-base may produce carbon monoxide, carbon dioxide and 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

Urea:

Urea reacts with calcium hypochlorite or sodium hypochlorite to form the explosive nitrogen trichloride. It is incompatible with sodium nitrite, gallium perchlorate, strong oxidizing agents (permanganate, dichromate, nitrate, chlorine), phosphorus penta

Boric Acid:

Potassium, acetic anhydride, alkalis, carbonates, and hydroxides.

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: Urea

ACGIH Threshold Limit Value (TLV): 10 mg/m³, 8-hour TWA

OSHA Permissible Exposure Limit (PEL): not available

Component: Boric Acid

ACGIH Threshold Limit Value (TLV): 10 mg/m³ total dust

OSHA Permissible Exposure Limit (PEL): 15 mg/m³ total dust

Component: Tris-Base

ACGIH Threshold Limit Value (TLV): none established

OSHA Permissible 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

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	8.3
e. Melting/Freezing Point (°C)	-10	f. Boiling point (°C)	102
g. Flash Point (°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)	1.12
m. Relative Density	1.16	n. Water Solubility	Soluble
o. Partition Coefficient n-octanol/water	Mixture	p. Autoignition Temperature (°C)	N.A.
q. Decomposition Temperature (°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 a highly reactive material

10.2 Chemical Stability

Stable under ordinary conditions of use and storage. If moisture is present, boric acid can be corrosive to iron.

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

Urea:

Urea reacts with calcium hypochlorite or sodium hypochlorite to form the explosive nitrogen trichloride. It is incompatible with sodium nitrite, gallium perchlorate, strong oxidizing agents (permanganate, dichromate, nitrate, chlorine), phosphorus penta

Boric Acid:

Potassium, acetic anhydride, alkalis, carbonates, and hydroxides.

Tris-Base:

No incompatibility data found.

10.6 Hazardous Decomposition Products

Urea decomposes upon heating and can form products including ammonia, oxides of nitrogen, cyanuric acid, cyanic acid, biuret, and carbon dioxide. Boric acid loses chemically combined water upon heating, forming metaboric acid (HBO₂) at 212 - 221F, then pyroboric acid (H₂B₄O₇) at 285-320F, and Boric anhydride at higher temperatures. The burning of tris-base may produce carbon monoxide, carbon dioxide and nitrogen oxides.

SECTION 11 - TOXICOLOGICAL INFORMATION

Product LD50 Values

Oral Rat LD50 (mg/kg)

19252

Dermal Rabbit LD50 (mg/kg)

No information found

Component Cancer List Status

	NTP Carcinogen		IARC Category
	Known	Anticipated	
Urea	No	No	None
Boric Acid	No	No	None
Tris-Base	No	No	None

Potential Health Effects

Inhalation

Urea

Causes irritation to the respiratory tract.

Boric Acid

Causes irritation to the mucous membranes of the respiratory tract.

Tris-Base

Causes irritation to the respiratory tract.

Ingestion

Urea

Causes irritation to the gastrointestinal tract.

Boric Acid

Harmful or fatal if ingested in sufficient volume.

Tris-Base

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

Skin

Urea

Causes irritation to the skin.

Boric Acid

Causes irritation to the skin.

Tris-Base

Causes irritation to the skin.

Eyes

Urea

Causes irritation to the eyes.

Boric Acid

Causes irritation to the eyes.

Tris-Base

Causes irritation to the eyes.

Carcinogenicity

Urea

Not listed as a carcinogen by NTP or IARC.

Boric Acid

Not listed as a carcinogen by NTP or IARC.

Tris-Base

Not listed as a carcinogen by NTP or IARC.

Mutagenicity

Urea

No information found.

Boric Acid

No information found.

Tris-Base

No information found.

Reproductive Toxicity

Urea

No information found.

Boric Acid

Studies of dogs and rats have shown that infertility and damage to testes can result from acute or chronic ingestion of boric acid. Evidence of toxic effects on the human reproductive system is inadequate.

Tris-Base

No information found.

Teratogenic Effects

Urea

No information found.

Boric Acid

No information found.

Tris-Base

No information found.

Routes of Entry

Urea

Ingestion and inhalation.

Boric Acid

Ingestion and inhalation. Not significantly absorbed through the intact skin. Readily absorbed through damaged or burned skin.

Tris-Base

Ingestion.

Target Organ Statement

Urea

Supersensitive individuals with skin or eye problems, kidney impairment or asthmatic condition should have physician's approval before exposure to urea dust.

Boric Acid

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

Tris-Base

No information available.

SECTION 12 - ECOLOGICAL INFORMATION

12.1 Toxicity

COMPONENT: Urea

	Vertebrates	Invertebrates	Algae	Microorganisms
Aquatic Toxicity (ppm unless otherwise noted)	>6810 @96 hrs	>10000 @ 24 hrs	>10000@ 7 days	>10000 @ 72 hrs

	Birds	Arthropods	Plants	Microorganisms
Terrestrial Environment Toxicity (ppm unless otherwise noted)	>16000mg/kg	no data	no data	no data

COMPONENT: Boric Acid

	Vertebrates	Invertebrates	Algae	Microorganisms
Aquatic Toxicity (ppm unless otherwise noted)	LC50 (Limanda limanda, 72hrs) 75mg/L	LC50 (48hr, Daphnia) 133mg/L	NOEC 50mg/L	EC50:(3hr) 175mg/L

	Birds	Arthropods	Plants	Microorganisms
Terrestrial Environment Toxicity (ppm unless otherwise noted)	No data	NOEC (21day, mortality) 175mg/kg soil	No data	EC50 24-250mg/L

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

Urea

Readily biodegradable

Boric Acid

No data

Tris-Base

Readily Biodegradable (>97% degradation at 28 days)

12.3 Bioaccumulative Potential

Urea

No data

Boric Acid

No data

Tris-Base

No data

12.4 Mobility in Soil

Urea

K_{oc}=0.037 - 0.064.

Boric Acid

logKp 0.34L/kg

Tris-Base

Log K_{oc} 1.57-1.85

12.5 Results of PBT and vPvB Assessment

Urea

Not a PBT or vPvB

Boric Acid

Does not apply (inorganic)

Tris-Base

Not a PBT or vPvB

12.6 Other Adverse Effects

Urea

No data

Boric Acid

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
Urea	No	No	No	Yes	Yes
Boric Acid	No	No	No	Yes	Yes
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

5/29/2015 - Updated Sections 2.1 and 3.2

7/23/2013 - Released Version 1.0

NFPA Codes

Health 1 Flammability 0 Reactivity 0

Dangers

Urea

None

Boric Acid

H360 - May damage fertility or the unborn child.

Tris-Base

H315 - Causes skin irritation.

H319 - Causes serious eye irritation.

H335 - May cause respiratory irritation.

MANUFACTURER DISCLAIMER: The information given herein is offered in good faith as accurate, but without guarantee. Conditions of the use and suitability of the product for particular uses are beyond our control. All risks of use of the product are therefore assumed by the user. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.