

MATERIAL SAFETY DATA SHEET



Conforms to 93/112/EC and ISO 11014-1

1. Chemical Product and Company Identification

Product Name: UreaGel Buffer

Product Number: EC-835

**Chemical Names/
Description:**

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

Manufacturer

National Diagnostics
305 Patton Drive
Atlanta, GA 30336

Telephone Numbers

(800) 526-3867
(404) 699-2121

Emergency Numbers

Chemtrec

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

2. Composition/Information on Ingredients

Component	% Comp.	CAS #	EINECS #	TLV (Units)
Urea	40-50	57-13-6	200-315-5	10 mg/m3, 8-hour TWA
Boric Acid	5-10	10043-35-3	233-139-2	10 mg/m3 total dust
Tris-Base	10-20	77-86-1	201-064-4	none established

3. Hazards Identification

Appearance and Odor

Clear colorless solution

EMERGENCY OVERVIEW - IMMEDIATE HAZARD

Urea

CAUSES IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. UREA IS HARMFUL IF SWALLOWED OR INHALED.

Boric Acid

CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. BORIC ACID IS HARMFUL IF SWALLOWED OR INHALED.

Tris-Base

CAUSES IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED.

EMERGENCY OVERVIEW - CHRONIC HAZARD WARNING:

Urea

LONG-TERM EXPOSURE TO HIGH AIRBORNE CONCENTRATIONS CAN LEAD TO PROTEIN METABOLISM DISTURBANCES, MODERATE EMPHYSEMA, AND CHRONIC WEIGHT LOSS.

Boric Acid

PROLONGED ABSORPTION OF BORIC ACID CAUSES WEIGHT LOSS, VOMITING, DIARRHEA, SKIN RASH, CONVULSIONS AND ANEMIA. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER, AND KIDNEYS.

Tris-Base

CHRONIC DERMATITIS MAY FOLLOW SKIN CONTACT.

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.

Signs and Symptoms of Overexposure

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.

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.

4. 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.

5. Fire Fighting Measures

Flash Point	N.A.	Flammable Limits	N.A.
Flash Point Method	N.A.	Autoignition temperature	N.A.

Extinguishing media

Use media appropriate to the primary cause of fire.

Protective Equipment

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.

Hazardous Combustion Products

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

Unusual Fire and Explosion Hazards

Not considered an explosion hazard.

NFPA Codes: Health 1 Flammability 0 Reactivity 0

6. Accidental Release Measures

Steps to be taken in case material is released or spilled

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.

Waste Disposal Method

Disposal must be made in accordance with applicable federal, state, and local regulations.

Personal Precautions

Wear appropriate protective equipment as specified in section 8.

7. Handling and Storage

Handling

Avoid contact and inhalation. Do not get in eyes, on skin, on clothing. Wash thoroughly after handling.

Storage

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

Storage Temperature

Room Temperature

Disposal

Observe all national, state, and local regulations regarding disposal.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits

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

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.

Other Control Measures

N.A.

9. Physical Properties

Boiling point	220 F	Evaporation Rate	1.0
Melting point	N.A.	Solubility in water	Soluble
Vapor pressure (mmHg)	Water	pH	8.3
Vapor density (Air = 1)	N.A.	Specific gravity (H₂O = 1)	1.16
% volatile by volume	31		

10. Stability and Reactivity

Stability

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

Conditions to Avoid

Heat, incompatibles.

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 Polymerization

Will not occur

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.

11. Toxicological Information

Product LD50 Values

UreaGel Buffer	Oral Rat LD50 (mg/kg):	19252
UreaGel Buffer	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

12. Ecological Information

Urea

When urea is released to soil, this material will hydrolyze into ammonium in a matter of days to several weeks. When released into the soil, this material may leach into groundwater. When released into water, this material may biodegrade to a moderate extent. When released into water, this material is not expected to evaporate significantly. This material has an experimentally determined bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day.

Boric Acid

The EC50/48-hour values for daphnia with boric acid are over 100 mg/l. This material may be toxic to aquatic life..

Tris-Base

No information found on either the environmental fate or environmental toxicity of this material.

13. Disposal Considerations

Observe all national, state, and local regulations regarding disposal.

14. Transport Information

D.O.T.

Proper Shipping Name: Not Regulated
 Hazard Class: N.A.
 UN Number: N.A.
 Packing Group: N.A.

I.A.T.A.

Proper Shipping Name: Not Regulated
 Hazard Class: N.A.
 UN Number: N.A.
 Packing Group: N.A.

I.M.O.

Proper Shipping Name: Not Regulated
 Hazard Class: N.A.
 UN Number: N.A.
 Packing Group: N.A.

15. Regulatory Information**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.

16. Other Information

NFPA Codes: Health 1 Flammability 0 Reactivity 0

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