

# 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: TBE 5X

Product Number: EC-861

### 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]

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 buffer salts (EDTA < 1%)

#### Component List

| Component  | % Comp. | CAS #      | EC #      | 1278/2008 Classification |
|------------|---------|------------|-----------|--------------------------|
| Boric Acid | 2.25    | 10043-35-3 | 233-139-2 | H360                     |
| Tris-Base  | 12      | 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

#### 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

#### 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

#### Boric Acid:

Symptoms of skin absorption parallel inhalation and ingestion.

#### Tris-Base:

Redness, itching, and pain.

### Eyes

#### 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

Boric acid loses chemically combined water upon heating, forming metaboric acid (HBO<sub>2</sub>) at 212 - 221F, then pyroboric acid (H<sub>2</sub>B<sub>4</sub>O<sub>7</sub>) 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 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

##### 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: Boric Acid

ACGIH Threshold Limit Value (TLV): 10 mg/m<sup>3</sup> total dust

OSHA Permissible Exposure Limit (PEL): 15 mg/m<sup>3</sup> 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)           | 0                         | f. Boiling point (°C)                           | 104.4   |
| 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)                      | N.A.    |
| 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 reactive under normal conditions of use and storage.

### 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

#### Boric Acid:

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

#### Tris-Base:

No incompatibility data found.

### 10.6 Hazardous Decomposition Products

Boric acid loses chemically combined water upon heating, forming metaboric acid (HBO<sub>2</sub>) at 212 - 221F, then pyroboric acid (H<sub>2</sub>B<sub>4</sub>O<sub>7</sub>) 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)

24583

#### Dermal Rabbit LD50 (mg/kg)

N.A.

### Component Cancer List Status

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

### Potential Health Effects

#### Inhalation

##### Boric Acid

Causes irritation to the mucous membranes of the respiratory tract.

##### Tris-Base

Causes irritation to the respiratory tract.

#### Ingestion

##### 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

##### Boric Acid

Causes irritation to the skin.

##### Tris-Base

Causes irritation to the skin.

#### Eyes

##### Boric Acid

Causes irritation to the eyes.

##### Tris-Base

Causes irritation to the eyes.

## Carcinogenicity

### Boric Acid

Not listed as a carcinogen by NTP or IARC.

### Tris-Base

Not listed as a carcinogen by NTP or IARC.

## Mutagenicity

### Boric Acid

No information found.

### Tris-Base

No information found.

## Reproductive Toxicity

### 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

### Boric Acid

No information found.

### Tris-Base

No information found.

## Routes of Entry

### 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

### 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: Boric Acid

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

|  | Birds   | Arthropods                            | Plants  | Microorganisms  |
|--|---------|---------------------------------------|---------|-----------------|
| Terrestrial Environment Toxicity<br>(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<br>(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<br>(ppm unless otherwise noted) | No data | No data    | No data | No data        |

### 12.2 Persistence and Degradability

#### Boric Acid

No data

#### Tris-Base

Readily Biodegradable (>97% degradation at 28 days)

### 12.3 Bioaccumulative Potential

**Boric Acid**  
No data

**Tris-Base**  
No data

### 12.4 Mobility in Soil

**Boric Acid**  
logKp 0.34L/kg

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

### 12.5 Results of PBT and vPvB Assessment

**Boric Acid**  
Does not apply (inorganic)

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

### 12.6 Other Adverse Effects

**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 |
|------------|------|----------|------------|-------|---------|
| 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

4/26/2019 - Updated Section 1.4

5/29/2015 - Updated Sections 2.1 and 3.2

8/19/2013- Released Version 1.0

### NFPA Codes

Health 1 Flammability 0 Reactivity 0

### Dangers

#### 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.

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