



North Metal and Chemical Company

1. Company Identification:

Product Name : 2-PHOSPHONOBUTANE-1,2,4-TRICARBOXYLIC ACID.
Synonyms : PBTC; PBTCA; Phosphonobutane Tricarboxylic Acid
Product Use : Used as a scale inhibitor, deflocculant, sequestrant, and water stabilizer in cooling water systems
Manufactured for : **NORTH Metal and Chemical Company**
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York, PA USA 17405 York, PA USA 17405
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In Case of Emergency or Spill Call CHEMTREC (24 Hours): 1-800-424-9300

2. Hazard Identification:

GHS Classification:

Acute Oral Toxicity (Category 5)
Acute Inhalation Toxicity (Category 4)
Skin Irritation (Category 2)
Serious Eye Damage (Category 1)
Corrosive to Metals (Category 1)

Signal Word: Danger

Pictograms:



Hazard Statements:

H290 : May be corrosive to metals.
H303 : May be harmful if swallowed.
H333 : May be harmful if inhaled
H315 : Causes skin irritation.
H318 : Causes serious eye damage.

Precautionary Statements:

P280 : Wear protective gloves (rubber/PVC)/protective clothing such as apron, boots and safety glasses with side shields.
P264 : Wash all affected body parts thoroughly after handling.
P273 : Avoid release to the environment.
P234 : Keep only in original packaging.
P305 + P351 + P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor/physician.
P310 : Immediately call a POISON CENTER/doctor
P302 + P352 : IF ON SKIN: Wash with plenty of soap and water
P332 + P313 : If skin irritation or rash occurs: Get medical advice/attention..
P301 + 312 : IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P304 + P340 : IF INHALED: Remove person to fresh air and keep in position comfortable for breathing
P391 + P501 : Collect Spillage. Dispose of contents/container in accordance with local/state/federal regulations.
P406 : Store in corrosive resistant Glass, PVC, PP or PE container/in container with a resistant inner liner

3. Composition/Information on Ingredient:

Chemical Name : 2-Phosphonobutane-1,2,4-tricarboxylic acid; PBTC.
Chemical Family : Organophosphates
Chemical Formula : $C_7H_{11}O_9P$ in H_2O
EC Number: : 253-733-5

| Substance: | CAS Number: | Hazard | Compo. (%) |
|--|-------------|---------------|------------|
| 2-Phosphonobutane-1,2,4-tricarboxylic acid | 37971-36-1 | See Section 2 | 48 - 52 |
| Water | 7732-18-5 | - | 48 - 52 |

4. First Aid Measures:

Eyes : Flush skin with running water for at least fifteen minutes. Remove any contact lenses. Get medical aid/attention immediately.

Skin : Remove contaminated clothing. Wash skin with plenty of running water and soap. Get medical attention/aid if irritation persists. Contaminated clothing should be thoroughly washed before reuse.

Ingestion : If the product is swallowed, first rinse mouth. Give small amount of water to drink. Call doctor/physician/poison center immediately. Do not induce vomiting. Never give anything by mouth to an unconscious person. If a person vomits, place him/her in recovery position so the vomit does not enter lungs.

Inhalation : If safe to do so, remove individual from further exposure. Keep warm and at rest. If breathing has ceased, give artificial respiration. Do not give mouth to mouth resuscitation. Get medical attention/consult a physician immediately.

Note to Physician : Treat symptomatically.

PPE for first responders : Gloves and safety goggles are highly recommended.

5. Fire Fighting Measures:

Fire/Explosion Hazard : None

General Hazard : Evacuate personnel downwind in-order to avoid inhalation of irritating and/or harmful fumes and smoke.

Extinguishing Media : Water spray, foam, dry chemical powder or carbon dioxide. Appropriate for the surrounding area.

Hazardous Combustion Products : Fire may cause evolution of corrosive vapors of phosphorous oxides as well as carbon oxides.

Fighting Procedures : Hazardous decomposition and combustion products such as phosphorous and carbon oxides can be formed if product is burning. Cool exposed containers with water spray to prevent overheating.

Fire Fighting Equipment : Respiratory and eye protection are required for fire fighting personnel. Full protective equipment (bunker gear) and self-contained breathing apparatus (SCBA) should be used for all fires. Evacuate area and fight fire from safe distance or a protected location. Move fire-exposed containers, if allowable without sacrificing the safety of the firefighters. If possible, firefighters should control run-off water to prevent environmental contamination.

Sensitivity to Static Discharge : Not sensitive.

Sensitivity to Mechanical Impact : Not sensitive.

6. Accidental Release Measures:

Protective Gear for Personnel:

For Small Spill : Safety glasses or chemical splash goggles, chemically resistant gloves, chemically resistant boots, and any appropriate body protection to minimize direct contact to the skin. Wear respiratory protection to avoid inhaling vapors.

For Large Spill : Triple gloves (rubber and nitrile over latex), chemical resistant suit, boots, hard hat, full face mask/an air purifying respirator (NIOSH approved). Self contained breathing apparatus must be worn in situations where fumigant gas generation and low oxygen levels are a consequence of contamination from the leak.

Spill Clean-up Procedures:

For Small Spill : In the event of a small spill, the spill should be contained with an absorbent pad and placed in a properly labeled waste disposal container immediately. Do not let chemical/waste enter the environment. Dispose as per instructions in section 13.

For Large Spill : In the event of a large spill, contain the spill immediately and dispose the spill/waste according to state, federal, and local hazardous waste regulation. Do not let chemical/waste enter the environment.

Environmental Precaution

: Water spill: use appropriate containment to avoid run off or release to sewer or other waterways.
Land spill: use appropriate containment to avoid run off or release to ground.
General precaution: remove containers of strong acid, alkali and incompatible materials from the release area.

Release Notes : If spill could potentially enter any waterway, including intermittent dry creeks, contact local authorities.

7. Handling and Storage:

Handling : Use appropriate personal protective equipment as specified in Section 8. Handle in a well-ventilated area. Handle in a manner consistent with good industrial/manufacturing techniques and practices. Wash hands thoroughly with soap and water after use. Remove contaminated clothing and protective equipment before entering eating areas.

Storage : Store in a cool, dry well-ventilated area. Keep containers closed when not in use. Keep containers isolated from incompatible materials/conditions such as heat and ignition sources. Protect against physical damage and check regularly for leaks.

8. Exposure Controls and Personal Protection:

Engineering Controls : Use appropriate engineering controls to minimize exposure to vapors/dust generated via routine use. Maintain adequate ventilation of workplace and storage areas.

Personal Protective Equipment

: **Eyes and face:** Wear safety glasses with side shields or face shield when handling this material.
Skin: Avoid direct contact with skin. Wear chemically resistant gloves, apron, boots or whole chemically resistant bodysuit when handling this product.
Respiratory: Avoid breathing vapor or mist. If risk of overexposure, use NIOSH approved respiratory protection equipment. If used, full face-piece replaces the need for face shield and/or chemical goggles. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application.

Work Hygienic Practices : Facilities storing or using this material should be equipped with emergency eyewash, and a safety shower. Good personal hygiene practices should always be followed.

Exposure Limits:

| Substance: | CAS No.: | OSHA STEL | OSHA PEL | ACGIH TLV | ACGIH STEL |
|--|------------|-----------|----------|-----------|------------|
| 2-Phosphonobutane-1,2,4-tricarboxylic acid | 37971-36-1 | N/A | N/A | N/A | N/A |

9. Chemical and Physical Properties:

| | | | |
|-------------------------|----------------------------|------------------------------|--|
| Appearance | : Clear/pale yellow Liquid | Lower Explosive Limit | : Not available |
| Odor | : Slight | Upper Explosive Limit | : Not available |
| Odor threshold | : Not available | Vapor Pressure | : ~20 mmHg @ 20 °C |
| Color | : Colorless to Pale Yellow | Vapor Density | : Not available |
| pH | : < 2.00 (1% Soln.) | Specific Gravity | : 1.26 - 1.30 @ 25 °C |
| Melting Point | : -15°C | Solubility | : Soluble in water |
| Freezing Point | : No data available | Partition Coefficient | |
| Boiling Range | : >100°C | n-octanol/water | : at 25°C: -1.36 log P (o/w) Anhydrous |
| Flash Point | : not combustible | Auto Ignition Temp. | : Not available |
| Ignition Temp. | : No data available | Molecular Weight | : 270 for the active ingredient |
| Evaporation Rate | : Not available | | |

10. Stability and Reactivity:

| | |
|---|---|
| Stability | : The product is stable under recommended storage and handling conditions. |
| Hazardous Polymerization | : Polymerization will not occur. |
| Hazardous Decomposition Products | : Gives off hydrogen by reaction with metals. Oxides of carbon and oxides of phosphorous formed under decomposition/fire. |
| Materials to Avoid | : Corrodes base metals. Reacts with oxidizing substances, alkalis, nitrites, steel , and sulphites. |
| Conditions to Avoid | : Avoid exposure to extreme temperatures, incompatible materials, & combustible materials. |

11. Toxicological Information:

Acute Oral Toxicity:

LD₅₀ Oral - Rat: > 6500 mg/kg

Acute Inhalation Toxicity:

LC₅₀ Inhalation - Rat: > 1.979 mg/L/4h (sodium salt)

Acute Dermal Toxicity:

LD₅₀ Dermal - Rat: >4000 mg/kg

Corrosion/Irritation:

Skin : Non-irritating - Rabbit
Eyes : Moderately irritating - Rabbit

Carcinogenicity : IARC, NTP, OSHA, ACGIH: Not listed

Mutagenicity : No data available.

Teratogenic Effects : No data available.

Routes of Exposure : Eyes, Skin, Inhalation, Ingestion

Potential Health Effects:

Eyes : Causes serious eye damage.
Skin : Can cause significant irritation to the skin.
Inhalation : Harmful if inhaled. Can cause irritation to the respiratory tract and can induce coughing.
Ingestion : May be harmful if swallowed. Can cause irritation and discomfort.

Sensitization : No data available

Reproductive Effects : No data available.

12. Ecological Information:

All work practices must be aimed at eliminating environmental contamination.

Biodegradability in

Soil/Water : No data available.

Bioaccumulative

Potential : Not expected

Terrestrial Ecotoxicity : This material can be harmful or fatal to contaminated plants or animals, especially if large volumes are released into the environments.

Aquatic Ecotoxicity (Acute)

Fish Toxicity : Golden Orfe (*Leuciscus idus*) - LC50: >500 mg/L/48h (STATIC)
: Rainbow Trout (*Salmo gairdneri*)- LC0: > 1000 mg/L/96h
: Zebra Fish (*Brachydanio rerio*) - LC50: > 1042 mg/L/96h (OECD 204)
: Zebra Fish (*Brachydanio rerio*) - NOEC: >= 1042 mg/L/14d (OECD 204)

Aquatic Invertebrates: Water Flea (*Daphnia magna*) - EC50: 1071 mg/L/48h (OECD 202)
: Water Flea (*Daphnia magna*) - EC50: 329 - 1071 mg/L/21d (OECD 211)
: Water Flea (*Daphnia magna*) - NOEC: 104 mg/L/21d (OECD 211)

Aquatic Plants : Algae - EC50: 1081 mg/L/72h (OECE 201)
: Algae - EC50: 33.3 - 65.5 mg/L/72h (OECD 201)

Water Hazard Class : slightly hazardous to water

Mobility in Soil : No data available.

Other Adverse Effects : No data available.

13. Disposal Considerations:

Disposal Method : Dispose of waste at an appropriate waste disposal facility according to current applicable laws and regulations.

For Large Spills : Contain material and call local authorities for emergency assistance.

Product Disposal : Dispose of at a supervised incineration facility or an appropriate waste disposal facility according to current applicable local, state and federal laws, regulations and product characteristics at time of disposal.

Empty Container : Contaminated container should be labeled and disposed in accordance to local, state and federal laws and regulations.

General Comments : Refer to section 6, accidental release measures for additional information.

14. Transport Information:

| Regulatory Information | UN No. | Proper Shipping Name | UN Class | Packing Group | Label |
|------------------------|--------|--|----------|---------------|-------------------|
| US DOT | 3265 | Corrosive Liquid, Acidic, Organic, N.O.S. (Hydroxyethylidene diphosphonic acid) | 8 | III | Corrosive Sticker |
| IMDG | 3265 | Corrosive Liquid, Acidic, Organic, N.O.S. (Hydroxyethylidene diphosphonic acid) | 8 | III | Corrosive Sticker |
| IATA | 3265 | Corrosive Liquid, Acidic, Organic, N.O.S. (Hydroxyethylidene diphosphonic acid) | 8 | III | Corrosive Sticker |

15. Regulatory Information:

U.S. FEDERAL REGULATIONS:

TSCA: All components of this product are listed on the TSCA inventory.

CERCLA: No components of this product are listed.

SARA TITLE III (EPCRA) Section 313: No components of this product are listed.

SARA TITLE III (EPCRA) Section 311/312: Acute Health Hazard/10,000 lbs.

US EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261): When discarded in its purchased form, this product meets the criteria of corrosivity, and should be managed as a hazardous waste (EPA Hazardous Waste Number D002). (40 CFR 261.20-24)

California Proposition 65: This product contains chemicals known to the State of California to be Carcinogenic. Developmental toxin - Female productive toxin. Male reproductive toxin

| <u>Weight %</u> | <u>Components</u> | <u>CAS No.</u> |
|-----------------|-------------------|----------------|
| 50 ppb | Cobalt | 7440-48-4 |
| 20 ppb | Cadmium | 7440-43-9 |
| 10 ppb | Arsenic | 7440-38-2 |
| 0.2 ppb | Nickel | 7440-02-0 |
| 1 ppb | Mercury | 7439-97-6 |
| 20 ppb | Lead | 7439-92-1 |

OSHA: This product is not considered highly hazardous.

Canadian WHMIS Classification: D2(B) - Materials causing other toxic effects; E - Corrosion Material

16. Other Information:

HMIS and NFPA Rating Scale:

HMIS: Hazardous Materials Identification System

NFPA: National Fire Protection Association

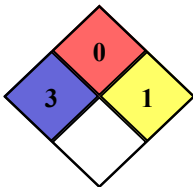
HMIS Rating:*

| | |
|---------------------|---|
| HEALTH | 3 |
| FLAMMABILITY | 0 |
| PHYSICAL HAZARD | 1 |
| PERSONAL PROTECTION | C |

*HMIS Key:

| |
|--|
| HEALTH 3—Serious |
| FLAMMABILITY 0 - Minimal |
| PHYSICAL HAZARD 1 - Slight |
| PERSONAL PROTECTION C — Gloves + Safety Goggles + Chemical Apron |

NFPA Rating:*



*NFPA Key:

| |
|--------------------------|
| HEALTH 1 - Serious |
| FLAMMABILITY 0 - Minimal |
| REACTIVITY 1 - Slight |
| SPECIFIC HAZARD —None |

Revision Date: April 17 2015

Reasons for Revision: Add necessary data to meet GHS requirements

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