

## Carus Proprietary Blended Phosphate Water Treatment Chemicals

### Product Safety Summary

#### Summary:

Carus Proprietary Blended Phosphate Water Treatment Chemical products are premier corrosion inhibitors and sequesterants for use in potable and industrial water systems. They are mostly liquid concentrates, with a few dry blends of exceptional purity, clarity and stability utilizing a broad spectrum of non-hazardous phosphates. These products are generally recognized as safe by the Federal Drug Administration (FDA).

#### Chemical Identity, Chemical Formula and CAS #:

One or more of the following phosphates are present in each product in this category.

Chemical Identity	Chemical Formula	CAS #
Phosphoric acid sodium salt	$\text{Na}_2\text{HPO}_4$	7558-80-7
Polyphosphoric acid, sodium salt	$(\text{NaPO}_3)_6$	68915-31-1
Diphosphoric acid, disodium salt	$\text{Na}_2\text{H}_2\text{P}_2\text{O}_7$	7758-16-9
Diphosphoric acid, tetrapotassium salt	$\text{K}_4\text{P}_2\text{O}_7$	7320-34-5
Triphosphoric acid, pentasodium salt	$\text{Na}_5\text{P}_3\text{O}_{10}$	7758-29-4
Diphosphoric acid, tetrasodium salt	$\text{Na}_4\text{P}_2\text{O}_7$	7722-88-5

#### What are Carus Blended Phosphate products and what are they used for?

Carus blended phosphate products are liquid or dry blends of the above mentioned phosphate salts. The above listed phosphates are either the sodium or potassium salts of either phosphoric acid or polyphosphoric acids. The blends are either pure phosphate salts dissolved in water to form a liquid product or dry blends of various phosphate salts and available as dry powders or liquid blends. The blended phosphates are a mixture of ortho and poly phosphates and used as an additive in drinking water treatment to eliminate or prevent corrosion. These products are also used as a sequesterant to isolate and hold unwanted impurities from depositing into the water system. They are sold under the trade names of AQUAMAG® Blended Phosphates, CALCIQUEST®, QUANTICHEM®, Carus™, and AQUADENE® Water Treatment Chemicals.

Carus blended phosphate products are primarily used as an integral part of corrosion control processes used by municipal drinking water authorities to purify and improve the quality of drinking water as it is distributed to the public. Controlling staining (red water caused by iron- based impurities and black water caused by manganese-based impurities), controlling copper and controlling lead release to the public are the primary applications of phosphate based products.

The main benefits from the use of phosphate products are the following:

1. Extends the operating life of the water distribution system by reducing corrosion and scale formation.
2. Eliminates and/or minimizes the presence of lead, copper, iron, and manganese impurities in the municipal drinking water.
3. Increases the water quality by preventing rusty and dirty water, discoloration, staining, and mineral buildup.

In addition to the water treatment application where Carus products are used, phosphates are also generally consumed by the public in multiple products. It is found in toothpaste, cola-based products, cheeses, as well as leavening agents in baking.

#### **Physical-Chemical Properties:**

Liquid phosphate blends are clear homogeneous liquids with a specific gravity of about 1.2-1.4 g/ml. They are mostly of neutral pH (4-9) and are not considered corrosive. The dry product blends are powders of white or off white color. The bulk densities of the dry blends are approximately 60-70 lbs/cubic feet and are soluble in water. Both liquid and dry blends are stable under normal conditions. They are not flammable and are not reactive. We recommend storing products in a tightly closed container in a cool, dry area and protecting containers from physical damage. Avoid freezing the liquid product blends.

#### **Health and Environmental Effects:**

Under normal conditions of use, Carus blended phosphate products are not expected to cause irritation to skin, eyes or respiratory tract. However, in applications where dust, vapors or mist are created, inhalation may cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath. The health effects of Carus blended phosphate products are minimal. Since they are of neutral pH, any impact on exposure is minimal. However contact on skin may cause irritation, inflammation and pain on prolonged contact, especially with moist skin. Eye contact may cause irritation, redness, and pain.

Blended phosphate water treatment chemicals are not toxic if ingested by animals or human. Phosphates are slowly and incompletely absorbed when ingested, and seldom result in systemic effects. Such effects, however, may occur on chronic ingestion. Symptoms may include vomiting, lethargy, diarrhea, blood chemistry effects, heart disturbances, and central nervous system effects. The toxicity of phosphates is due to their ability to sequester calcium.

Blended phosphate water treatment chemicals are considered as practically non toxic to animals and aquatic organisms. Since it is an inorganic compound and contains no degradable functional groups, it exerts no biological oxygen demand.

None of the components have been classified as a carcinogen by ACGIH, OSHA, NTP, IARC, or California Proposition 65.

#### **Exposure Potential:**

Carus blended phosphate products are not corrosive to eyes and skin. However, when exposed it may cause irritation to eyes and skin. The most likely ways exposure could occur are:

1. Worker Exposure- Exposure could occur in the manufacturing facility, transportation personnel, or users in municipal drinking water or waste water treatment facilities and or industrial facilities that use Carus blended phosphate water treatment chemicals. When exposures occur, they are typically skin, eye, or inhalation exposures. Ingestion exposure is not very likely to occur. To minimize the risk of exposure, good industrial hygiene practice, engineering controls and the use of personal protective equipment, such as chemical goggles, gloves, and work clothing that covers arms and legs as needed, have been established. Emergency responders such as firefighters could also be exposed to phosphates if they are present during an incident. Normal turnout protective gear for first responders such as positive pressure breathing units, chemical resistant suits, boots and gloves will minimize their risk.

2. Consumer Exposure – Carus Corporation does not sell Carus blended phosphate products in retail stores, although the components present in our products may also be an ingredient in some consumer products from other manufacturers. Public exposure to phosphates is possible through accidents, spills, and inadvertent misuse of the products or overdosing from the municipality.
3. Releases: Non-routine releases to the environment can occur from accidents, spills and inadvertent misuse of the products. If a spill occurs, emergency personnel should wear protective equipment suitable for the task to minimize exposures.

**Risk Management Measures:**

The primary mechanism for providing advice on the handling of phosphates is through the Safety Data Sheet (SDS). Carus provides a SDS to all customers and others directly involved in handling the products, and to other stakeholders upon request through the company website. All of the pertinent handling information is reemphasized in Product Data (specification) Sheets and in Technical Bulletins targeted to specific uses of phosphates.

Carus also provides customers advice and assistance in the design and construction of equipment used to safely handle phosphates. For example, Carus can assist with compatible materials recommendations and technical assistance on dosing and sizing equipment.

Carus has prepared a series of Technical Briefs that advise customers how to safely and effectively use phosphates.

In addition Carus provides PowerPoint safety presentations given by the Technical Services Department or trained personnel. In many municipal bids this is written in as a requirement of the vendor.

**STATE AGENCY REVIEW**

The substances present in the Carus Proprietary Blended Phosphate Water Treatment Chemical product are listed in the TSCA inventory and in the Canada DSL. However, they are not registered under REACH (EC) 1907/2006.

**REGULATORY INFORMATION / CLASSIFICATION AND LABELLING (GHS)**

Under GHS substances and mixtures are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific product labels and the SDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use.

*Note: The hazard statements and symbols presented here refer to the hazard properties of the product and are meant to provide a brief overview of the product’s labeling. It is not intended to be comprehensive or to replace information found in the SDS or product labels.*

The following components do not have any physical, health or OSHA defined hazards at any concentration in the product. The phosphate products (mixture) containing this component at any concentration does not meet the criteria for classification.

Phosphoric acid sodium salt	Na <sub>2</sub> HPO <sub>4</sub>	7558-80-7
Polyphosphoric acid, sodium salt	(NaPO <sub>3</sub> ) <sub>6</sub>	68915-31-1
Triphosphoric acid, pentasodium salt	Na <sub>5</sub> P <sub>3</sub> O <sub>10</sub>	7758-29-4

The following component do not have any physical, or OSHA defined hazards at any concentration in the product. The pure component has the following health hazard.

Diphosphoric acid, tetrasodium salt       $\text{Na}_4\text{P}_2\text{O}_7$       7722-88-5

**Health Hazard:**      Acute toxicity, oral Category 4

**Label elements:**

**Signal word:**      Warning

**Hazard statement:**      Harmful if swallowed.

However, none of the phosphate products (mixture) containing this component containing this component is classified because the concentration of the component in mixture does not meet the criteria for classification.

The following component do not have any physical, or OSHA defined hazards at any concentration in the product. The pure component has the following health hazard.

Diphosphoric acid, disodium salt       $\text{Na}_2\text{H}_2\text{P}_2\text{O}_7$       7758-16-9

Diphosphoric acid, tetrapotassium salt       $\text{K}_4\text{P}_2\text{O}_7$       7320-34-5

**Health hazards:** Serious eye damage/eye irritation Category 2 or 2A

**Label elements:**



**Signal word:**      Warning

**Hazard statement:**      Causes serious eye irritation.

**Precautionary statement:**

**Prevention:**      Wash thoroughly after handling. Wear eye/face protection.

**Response:**      If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

**Storage:**      Store away from incompatible materials.

**Disposal:**      Dispose of waste and residues in accordance with local authority requirements.

When the phosphate products (mixture) containing any one of the above two components in excess of 5%, the product is classified as stated above.

**RCRA (Resource Conservation and Recovery Act of USA):**

Unused Carus Proprietary Blended Phosphate Water Treatment Chemical products are not considered as hazardous waste. Used Carus Proprietary Blended Phosphate Water Treatment Chemical products can be disposed of as non-hazardous wastes after verifying that it is not contaminated with hazardous substances through usage.

**Transport Information:**

Carus Proprietary Blended Phosphate Water Treatment Chemical products are not regulated by DOT, TDG, IMDG and IATA.

**CONCLUSION**

Carus Proprietary Blended Phosphate Water Treatment Chemical products are used in water treatment applications. Exposure to humans and the environment is considered low if properly handled. Use of this product has been shown to be safe when usage instructions provided are followed carefully. Short term exposure may cause skin irritation and serious eye irritation.

**CONTACT INFORMATION WITHIN COMPANY**

For further information on this substance or product safety summaries in general, please contact:

[salesmkt@caruscorporation.com](mailto:salesmkt@caruscorporation.com) or visit our website at  
<http://www.caruscorporation.com/page/site/responsible-care>

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