



## CARUS™ 8600 BLENDED PHOSPHATE CASE STUDY

Solves Lead Issue More Effectively Than Phosphoric Acid

### BACKGROUND

A city located in the United States was investigating high lead levels in their system with lead levels of 17 ppb which is over the U.S. EPA (United States Environmental Protection Agency) action level of 15 ppb. During the investigation, the city also changed their coagulant from ferric sulfate to poly-aluminum chloride to reduce the iron fouling on their membrane system. This switch caused the lead levels to spike in their system to a high of 27 ppb but did eliminate the iron fouling on their membrane system which reduced their down time and chemicals required to clean the membranes. Based on the benefits to the treatment system from the changes, the city decided to explore different phosphate blends for lead corrosion control.

The water system treats water from a nearby lake through conventional treatment followed by membrane filtration and pumps an average 68,137 m<sup>3</sup>/day.

### WATER QUALITY DATA

Iron:	0.02 mg/L
Hardness:	140 mg/L
pH:	7.7 - 7.8
Manganese:	0.01 mg/L
Alkalinity:	100 mg/L

### EVALUATION

The city and Carus evaluated the water quality and considered the lead leaching as they evaluated the proper product selection for this municipality.

A corrosion control study was completed to test phosphoric acid at 1.0 mg/L as total phosphate (1.0 mg/L as orthophosphate) versus CARUS 8600 blended phosphate at 1.0 mg/L as total phosphate (0.70 mg/L as orthophosphate)

### CONCLUSIONS & OBSERVATIONS

The corrosion control study results showed that the CARUS 8600 blended poly/ortho phosphate provided better treatment than the phosphoric acid product with the following results:

- Lead corrosion rates were 0.26 mpy with orthophosphate and were lowered to 0.07 mpy with CARUS 8600
- Copper corrosion rates were 0.53 mpy with orthophosphate and were lowered to 0.26 mpy with CARUS 8600
- Mild Steel corrosion rates were 4.20 mpy with orthophosphate and were lowered to 3.33 mpy with CARUS 8600

Based on the results of the corrosion control study, the city applied CARUS 8600 to the finished water and this resulted in:

- Lead levels dropping from 27 ppb to 5 ppb in 1 year
- Keep their new coagulant which had resulted in less membrane fouling



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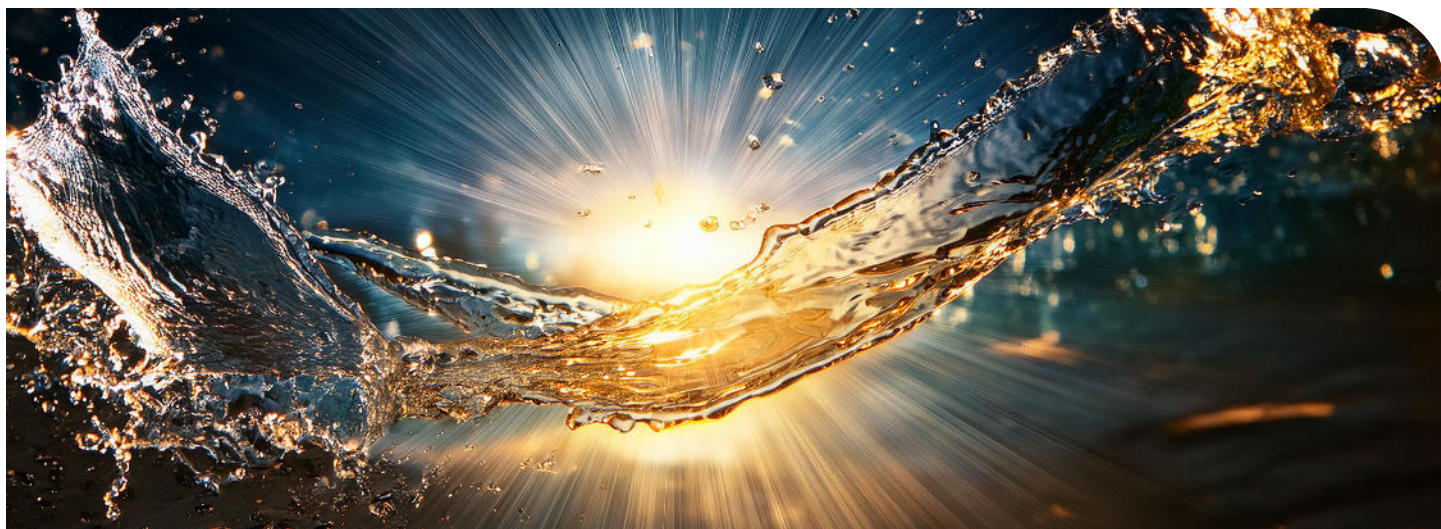
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## SHIPPING CONTAINERS

### 5 gallon (58 lb) Jerrican

Made of high density polyethylene (HDPE). Weighs 3.31 lbs. (1.5 kg). **The net weight is 58 lbs. (26.3 kg).**

### 30 gallon (345 lb) Drum

Made of high density polyethylene (HDPE). Weighs 12.2 lbs. (5.5 kg). **The net weight is 345 lbs. (156.5 kg).**

### 55 gallon (633 lb) Drum

Made of high density polyethylene (HDPE). Weighs 20.5 lbs. (9.21 kg). **The net weight is 633 lbs. (287.1 kg).**

### 275 gallon (3163 lb.) IBC (Intermediate Bulk Container)

The IBC has a 2 inch (5.08 cm) butterfly valve with NPT threads in bottom sump. Weighs 123.2 lbs. (55.9 kg). **The net weight is 3163 lbs. (1435 kg).**

**Bulk quantities up to 3500 gallons are available.**

Other containers may be available, contact Carus at (800) 435-6856 for details.

## SHIPPING

CARUS™ 8500 water treatment chemical is generally considered to be safe and is not classified as hazardous according to the US Department of Transportation, Canada TDG, UN, IMDG, or IATA regulations.

## CARUS VALUE ADDED

### LABORATORY SUPPORT

Carus has technical assistance available to answer questions, evaluate treatment alternatives, and perform laboratory testing. Our laboratory capabilities include: consulting, treatability studies, feasibility studies, and analytical services.

### FIELD SERVICES

As an integral part of our technical support, Carus provides extensive on-site treatment assistance. We offer full application services, including technical expertise, supervision, testing, and feed equipment design and installation in order to accomplish a successful evaluation and/or application.

### CARUS

During its more than 100-year history, Carus' ongoing emphasis on research and development, technical support, and customer service has enabled the company to become the world leader in permanganate, manganese, oxidation, and base-metal catalyst technologies.



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