



TECHNICAL SUMMARY

Permanganate is used in systems treating surface water to aid in the control of off-flavor tastes and odors. Off-flavors are usually attributed to the presence of blue-green algae in the water supply. Permanganate does not treat algae, but treats the chemical by-product responsible for taste and odor in water containing blue-green algae. The oxidant has been found to be most effective in treating off-flavors described as fishy, septic, grassy, and cucumber. In many cases permanganate will compliment activated carbon and other treatment processes resulting in a cost-effective taste and odor control program.

APPLICATION

To determine the Permanganate Value (PV_t), where t is time, laboratory tests simulating plant conditions of time, the sequence of addition of other treatment chemicals, etc., are conducted. The procedure is described in Carus Form # 3353. This is the raw water permanganate demand in a given period of time. This value is used to calculate the feed rates needed.

Permanganate is usually fed at the intake to take advantage of the time available in the raw water transmission line and to insure that all of the oxidant is used up prior to the addition of other treatment chemicals such as alum, chlorine, activated carbon, or iron salts. Control can be visual or monitored using residual permanganate analytical methods given in Standard Method 4500 - KMnO₄.

CHEMISTRY

Taste & Odor Compounds + MnO₄ → MnO₂ + Odorless By-products

DOSAGE

Normal dosages to control tastes and odors will range between 0.5 and 2.5 mg/L KMnO₄ depending on the degree of raw water contamination. The average dosage is ~1.0 mg/L KMnO₄

FACILITY REQUIREMENTS

Proper feed equipment specially designed to handle permanganate is recommended and available from Carus. The product must be put into solution before being introduced into the system. Operators should be trained to monitor permanganate residuals and to exercise proper safety precautions when handling the oxidant.

BENEFITS

Cost-effective taste and odor control programs include the application of permanganate to compliment activated carbon and other control methods. In many cases the volume of carbon is substantially reduced as a result of permanganate pretreatment. Permanganate does not form trihalomethanes and aids in the coagulation process.

REFERENCES

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Municipal Drinking Water
Treatment for Taste and
Odor Control

CAIROX® POTASSIUM PERMANGANATE
CARUSOL® LIQUID PERMANGANATE
TECHNICAL BRIEF

OTHER APPLICATIONS

- Taste & Odor
- Disinfection by-product Control
- Iron & Manganese Removal
- Arsenic & Radium Control

CARUS VALUE ADDED

LABORATORY SUPPORT

Carus Corporation has technical assistance available to answer questions, evaluate treatment alternatives, and perform laboratory testing. Our laboratory capabilities include; 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.

EQUIPMENT SERVICES

Standard feeders are designed specifically for CAIROX® potassium permanganate. Various options and accessories are available to meet a wide range of applications. Carus offers custom-engineered feed systems, pre-engineered and prepackaged systems through an equipment partner. They provide efficient, dust-free methods of storing, mixing, and feeding CAIROX potassium permanganate. System designs are customized to meet specific applications and customer needs.

CARUS CORPORATION

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

For further information on CAIROX® potassium permanganate or CARUSOL® liquid permanganate product characteristics and availability, contact Carus Corporation at 1-800-435-6856.

CARUS CORPORATION

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CORPORATE HEADQUARTERS | 315 Fifth Street, Peru IL 61354 | Tel + 1.815.223.1500 / 1-800-435-6856 | Fax + 1.815.224.6697 | Web: www.caruschem.com | E-Mail: salesmkt@caruschem.com
CARUS EUROPE | Parque Empresarial de ASIPO | C/Secundino Rocas 3, Planta 1, Oficina 13-14 | 33428 Cayes, Llanera Spain | Tel +34.985.78.55.13 / Fax +34.985.78.55.10

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