

LIQUOX® sodium permanganate is a liquid oxidant recommended for use in Electronics and Fine Chemical Synthesis, that require a concentrated permanganate solution.

## PRODUCT SPECIFICATIONS

### Assay

40% minimum as  $\text{NaMnO}_4$

### pH

5.0-8.0

### Specific Gravity

≥ 1.37

### Insolubles

≤ 0.005%

## CHEMICAL/PHYSICAL DATA

<b>Formula</b>	$\text{NaMnO}_4$
<b>Appearance</b>	Deep Purple Solution
<b>Shelf Life</b>	This product should be used within one year of the date of production.
Decomposition may start at 150 °C / 302 °F	

## APPLICATIONS

- **Desmearing/Etchback** - Printed circuit board desmearing and etchback.
- **Oxidation and Synthesis** - Organic chemicals and intermediates manufacture. Oxidizes impurities in organic and inorganic chemicals.

## BENEFITS

- Concentrated liquid oxidant
- More precise dosing of chemical
- Feed equipment is simplified
- Consistent concentration
- Dust problems are eliminated
- High solubility at room temperature
- Can be used whenever potassium ion cannot be tolerated

## SHIPPING CONTAINERS

### 5 gallon (18.9L) Tight Head HDPE Jerrican

(UN Specification: 3H1) made of High Density Polyethylene (HDPE), weighs 3.5 lb (1.6 kg). The net weight is 57 lb (25.7 kg). The jerrican stands approximately 15.33 in. tall, 10.2 in. wide and 11.4 in. long (38.94 cm tall, 25.91 cm wide, 28.96 cm long).

### 55-gallon (208.2L) HDPE TightHead Drum

(UN Specification: UN1H1/Y1.9/150) Made of high-density polyethylene (HDPE). Weighs 22 lbs (10 kg). The net weight is 550 lbs (249.5 kg). The drum stands approximately 34.5 in. tall, has an outside diameter of 23.4 in. (89.1 cm tall, OD 59.4 cm).

### 275-gallon (1040-L) IBC (Intermediate Bulk Container)

(UN Specification: UN31HA1/Y1.9/100) They are also marked "MX" for multi-trip. IBC weighs 139-lbs (65-kg). The net weight is 3000-lbs (1360-kg). The IBC contains 263-gallons (1000-L) of product. The IBC dimensions are 45.4 in. high, 48 in. long, and 40 in. wide. The IBC has a 2" butterfly valve with NPT threads in bottom sump. (Domestic)

## HANDLING, STORAGE, AND INCOMPATIBILITY

Like any strong oxidant, LIQUOX sodium permanganate should be handled with care. Protective equipment during handling should include face shields and/or goggles, rubber or plastic gloves, rubber or plastic apron. If clothing becomes spotted, wash off immediately; spontaneous ignition can occur with cloth or paper. In cases where significant exposure exists, use of the appropriate NIOSH-MSHA dust or mist respirator or an air supplied respirator is advised.

The product should be stored in a dry area in closed containers. Product should be stored above 50°F. Concrete floors are preferred. Avoid wooden decks. Spillage should be collected and disposed of properly. Contain and dilute spillage to approximately 6% with water and reduce with sodium thiosulfate, a bisulfite, or ferrous salt. The bisulfite or ferrous salt may require dilute sulfuric acid to promote reduction. Neutralize any acid used with sodium bicarbonate. Deposit sludge in an approved landfill or, where permitted, drain into sewer with large quantities of water.

As an oxidant, the product itself is non-combustible, but will accelerate the burning of combustible materials. Therefore, contact with all combustible materials and/or chemicals must be avoided. These include, but are not limited to: wood, cloth, organic chemicals, and charcoal. Avoid contact with acids, peroxides, sulfites, oxalates, and all other oxidizable inorganic chemicals. With hydrochloric acid, chlorine is liberated.



## LIQUOX® SODIUM PERMANGANATE DATA SHEET

### COMPATIBILITY

LIQUOX® sodium permanganate is compatible with many metals and synthetic materials. Natural rubbers and fibers are often incompatible. Solution pH and temperature are also important factors. The material selected for use with sodium permanganate must also be compatible with any acid or alkali being used.

In neutral and alkaline solutions, sodium permanganate is not corrosive to carbon steel and 316 stainless steel. However, chloride corrosion of metals may be accelerated when an oxidant such as sodium permanganate is present in solution. Plastics such as teflon, polypropylene, HDPE and EDPM are also compatible with sodium permanganate.

Aluminum, zinc, copper, lead, and alloys containing these metals may be slightly affected by sodium permanganate solutions. Actual corrosion or compatibility studies should be made under the conditions in which the permanganate will be used prior to use.

### SHIPPING

LIQUOX sodium permanganate is classified as an oxidizer. Sodium permanganate is shipped domestically as Class 70 and has a Harmonized Code for export of 2841.69.0010

Proper Shipping Name:	Permanganates, Inorganic, Aqueous solution, n.o.s. (Contains Sodium Permanganate)
Hazard Class:	5.1
Identification Number:	UN 3214
Packaging Group:	II
Label Requirements:	Oxidizer, 5.1
Special Provisions:	T8-Intermodal transportation in IM 101 portable tanks
Packaging Requirement:	49 CFR Parts 171 to 180 Sections: 173.152, 173.202, 173.242
Quantity Limitations:	1 liter net for passenger aircraft or railcar. 5 liters net for cargo aircraft.
Vessel Stowage:	D-material must be stowed "ondeck" on a cargo vessel, but is prohibited on a passenger vessel. Other provisions, stow "separated from" ammonium compounds, hydrogen peroxide, peroxides and superperoxides, cyanide compounds, and powdered metal.

### 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: 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 CORPORATION

During its 95-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.

#### CARUS CORPORATION

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