LIQUOX®

Sodium Permanganate
CAS No. 10101-50-5

Fact Sheet

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 $NaMnO_4$
pH	5.0 - 8.0
Specific Gravity	1.36 - 1.39
Solubility in Water	Miscible with water in all proportions.

Chemical/Physical Data

Formula	$NaMnO_4$
Appearance	Dark Purple Solution
Stability	18 months
Insolubles	<0.005 %

Applications

- Printed Circuit Board Desmearing
- Fine Chemical Synthesis

Benefits

- Concentrated liquid oxidant is easily stored and handled. Feed equipment is simplified (no need to transfer and dissolve crystalline product).
- Dust problems associated with handling dry oxidants are eliminated.
- High solubility at room temperature. Reactions requiring a concentrated permanganate solution can be conducted without having to raise the temperature.
- Can be used instead of potassium permanganate whenever the potassium ion cannot be tolerated, or if dusting is a critical issue.

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).

Handling and Storage

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 cool, dry area in closed containers. 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.

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.

Repackaging

When LIQUOX® sodium permanganate is repackaged, the packaging, markings, labels, and shipping conditions must meet applicable federal regulations. See Code of Federal Regulations-49, Transportation, parts 171-180, and the Federal Hazardous Materials Transportation Act (HMTA).

Corrosive Properties

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.

Carus Value Added

LABORATORY SUPPORT

Carus Chemical Company has technical assistance available to its potential and current customers to answer questions or perform laboratory and field testing including:

*Feasibility Studies * Toxicity Evaluations *Treatability Studies *Analytical Services *Field Trials

CARUS CHEMICAL COMPANY

During its more than 90-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 catalyst technologies.

CARUS®

Responsible Care®
Good Chemistry at Work

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