



CAIROX® POTASSIUM PERMANGANATE FREE-FLOWING GRADE DATA SHEET

SHIPPING CONTAINERS

25 kg pail⁽¹⁾ (55.125 lb) net, with handle, made of HDPE, weighs 2.1lbs (.95 kg). It is tapered to allow nested storage of empty drums, stands approximately 15.6 inches (39.7 cm) high and has a maximum diameter of 12.3 inches (31.2 cm).

150 kg drum⁽¹⁾ (330.75 lb) net, made of 22-gauge steel, weighs 25.3 lbs (11.5 kg). It stands approximately 28.4 inches (72.2 cm) high and is approximately 19.7 inches (50.0 cm) in diameter.

1500 kg CYCLE BIN™⁽²⁾ reusable container (3307 lb) net

Bulk, up to 48,000 lbs

Special Packages will be considered on request.

- (1) Meets UN performance oriented packaging requirements.
- (2) The CYCLE BIN meets DOT 56 or UN 11A Specifications.

DESCRIPTION

Crystals or granules are dark purple with a metallic sheen, sometimes with a dark bronze-like appearance. Potassium permanganate has a sweetish, astringent taste and is odorless.

HANDLING, STORAGE, AND INCOMPATIBILITY

Protect containers against physical damage. When handling potassium permanganate, respirators should be worn to avoid irritation of or damage to mucous membranes. Eye protection should also be worn when handling potassium permanganate as a solid or in solution.

Potassium permanganate is stable and will keep indefinitely if stored in a cool, dry area in closed containers. Concrete floors are preferred to wooden decks. To clean up spills and leaks, follow the steps recommended in the SDS. Be sure to use goggles, rubber gloves, and respirator when cleaning up a spill or leak.

Avoid contact with acids, peroxides, and all combustible organic or readily oxidizable materials including inorganic oxidizable materials and metal powders. With hydrochloric acid, chlorine gas is liberated. Potassium permanganate is not combustible, but will support combustion. It may decompose if exposed to intense heat. Fires may be controlled and extinguished by using large quantities of water. Refer to the SDS for more information.

Free-Flowing Grade is recommended where potassium permanganate is subjected to high humidity conditions and where the material is to be dry fed through a chemical feeder or stored in a bin or hopper.

FREE-FLOWING GRADE

Assay

Guaranteed 97% KMnO₄

Particle Size

20% maximum retained on #425 micron
(formerly #40 U.S. Standard Sieve)

7% maximum through #75 micron
(formerly #200 U.S. Standard Sieve)

Standards and Specifications

CAIROX® potassium permanganate is certified by the National Sanitation Foundation (NSF) to NSF/ANSI Standard 60: Drinking Water Treatment Chemicals - Health Effects.

Free-Flowing Grade meets:

AWWA Standard B603

Military Specifications MIL-P-11970-C dated 14 October 1983
Water Chemical Codex RMIC values

CHEMICAL/PHYSICAL DATA

Formula	KMnO ₄		
Formula Weight	158.0 g/mol		
Form	Granular Crystalline		
Specific Gravity			
Solid	2.703 g/cm ³		
3% Solution	1.020 g/mL by weight, 20°C / 4°C		
Bulk Density	Approximately 100 lb/ft ³		
Decomposition may start at 150 °C / 302 °F			

SOLUBILITY IN DISTILLED WATER

Temperature		Solubility	
°C	°F	g/L	oz/gal
0	32	27.8	3.7
20	68	65.0	8.6
40	104	125.2	16.7
60	140	230.0	30.7
70	158	286.4	38.3
75	167	323.5	43.2



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CORROSIVE PROPERTIES

Potassium 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 must be compatible with either the acid or alkali also being used.

In neutral and alkaline solutions, potassium permanganate is not corrosive to iron, mild steel, or stainless steel; however, chloride corrosion of metals may be accelerated when an oxidant such as permanganate is present in solution. Plastics such as polypropylene, polyvinyl chloride Type I (PVC I), epoxy resins, fiberglass reinforced plastic (FRP), Penton, Lucite, Viton A, and Hypalon are suitable. Teflon FEP and TFE, and Tefzel ETFE are best. *Refer to Material Compatibility Chart.*

Aluminum, zinc, copper, lead, and alloys containing these metals may be (slightly) affected by potassium permanganate solutions. Actual studies should be made under the conditions in which permanganate will be used.

SHIPPING

CAIROX potassium permanganate is classified and listed as an oxidizer by PHMSA (Pipeline and Hazardous Materials Safety Administration, Department of Transportation, in 49 CFR Subchapter C, HMR (Hazardous Materials Regulation), Part 172.101 HMT (Hazardous Materials Table). It is shipped under Interstate Commerce Commission's (ICC) Tariff 19.

Proper Shipping Name: Potassium Permanganate
(RQ-100/45.4)

Hazard Class: Oxidizer

Identification Number: UN 1490

Label Requirements: Oxidizer

Packaging Requirements: 49 CFR Parts 100 to 199,

Sections: 173.152, 173.153, 173.194

Shipping Limitations:

Minimum quantities:

Rail car: See Tariff for destination

Truck: No minimum

REPACKING

When potassium permanganate is repacked, the packing, markings, labels, and shipping conditions must meet applicable Federal regulations. See Code of Federal Regulations-49, Transportation (parts 100-199) and Federal Hazardous Materials Substances Act, 15 U.S.C. 1261.

APPLICATIONS

Listed below are some of the many applications of potassium permanganate. Permanganate is a powerful oxidizing agent. The optimum condition under which it is to be used can be easily established through technical service evaluations or laboratory testing.

- **Oxidation and Synthesis**
- **Water Treatment**
- **Municipal Wastewater Treatment**
- **Industrial Wastewater Treatment**
- **Metal Surface Treatment**
- **Equipment Cleaning**
- **Purification of Gases**
- **Mining and Metallurgical**
- **Slag Quenching**
- **Food Processing**