

CLIP, Chemical Laboratory Information Profile

"Only when you know the hazards, can you take the necessary precautionary measures."

Potassium chlorate**CAS No.: 3811-04-9**

Synonym: Potrate

Physical Properties**Exposure Limits**

White crystalline solid.			
Vapor pressure at 20 °C:	negligible	OSHA PEL:	NE
Melting point:	356 °C	ACGIH TLV:	NE
Boiling point:	decomposes at approx. 400 °C		

Hazardous Characteristics

Overall toxicity	Flammability	Destructive to skin/eye	Absorbed through skin	Sensitizer?	Self-reactive?	Incompatible with:
1	0	2	0	No	No	Sulfuric acid, any substance that can burn, all reducing agents.*

0: None (or very low); 1: Slight; 2: Moderate; 3: High; 4: Severe.

***Reactivity Hazards**

Potassium chlorate reacts vigorously with sulfuric acid producing chlorine dioxide which is unstable and explodes violently. Potassium chlorate is a very strong oxidizing agent; it evolves oxygen when heated to decomposition temperatures. Although not itself combustible, it enhances the combustibility of any combustible substance with which it is mixed. Mixtures of potassium chlorate and a reducing agent are heat-, shock-, friction-, and impact-sensitive; such mixtures often explode violently when they are heated, shocked, ground (as in a mortar), or impacted, and will almost certainly explode if exposed to any source of ignition. See Bretherick's *Handbook of Reactive Chemical Hazards* for details and for other incompatibilities.

Cited as known to be or reasonably anticipated to be carcinogenic in NTP-9? No

Identified as a reproductive toxin in Frazier and Hage, *Reproductive Hazards of the Workplace?* No

Typical symptoms of acute exposures:

In the eyes, causes pain; on the skin causes mild inflammation; if inhaled causes sore throat, coughing, headache, dizziness and fainting, depending upon the severity of the exposure. If ingested, causes nausea, abdominal pain, diarrhea, and unconsciousness, depending upon the severity of the exposure.

Principal target organ(s) or system(s):

Eyes and other mucous membranes, central nervous system, gastrointestinal tract, blood.

Storage Requirements

Keep in a cool, dry, well-ventilated location, away from flammables, combustibles, and other reducing agents.

Additional Remarks

Mixtures of potassium chlorate and manganese dioxide, sometimes used for the laboratory preparation of oxygen, are prone to explode when heated. When charcoal is mistakenly substituted for the manganese dioxide, the mixture is even more likely to explode, even without heating. Other substances not ordinarily considered to be reducing agents with which potassium chlorate is incompatible include ammonia and ammonium salts, metals, cyanides, and hydroiodic acid.

Notes**ReadMe**

This Chemical Laboratory Information Profile is *not* a Material Safety Data Sheet. It is a brief summary for teachers and their students that describes some of the hazards of this chemical as it is typically used in laboratories. On the basis of your knowledge of these hazards and before using or handling this chemical, *you need to select the precautions and first-aid procedures to be followed*. For that information as well as for other useful information, refer to Material Safety Data Sheets, container labels, and references in the scientific literature that pertain to this chemical.

Reproductive Toxins

Some substances that in fact are reproductive toxins are not yet recognized as such. For the best readily available and up-to-date information, refer to "DART/ETIC". See the TOXNET home page at www.sis.nlm.nih.gov and click on "Toxicology search". Note that some of the data in DART/ETIC have not been peer-reviewed. See also Linda M. Frazier and Marvin L. Hage, *Reproductive Hazards of the Workplace*; Wiley, 1998; and T. H. Shepard, *Catalog of Teratogenic Agents*, 9th ed.; Johns Hopkins University Press, 1998.

Abbreviations

ACGIH TLV—American Conference of Governmental Industrial Hygienists—Threshold Limit Value. C—Ceiling. CAS—Chemical Abstracts Service. mg/m³—milligrams per cubic meter. NA—Not applicable. NE—Not established. NI—No information. NTP-9—National Toxicology Program, Ninth Annual Report on Carcinogens. OSHA PEL—Occupational Safety and Health Administration—Permissible Exposure Limit. ppm—parts per million. STEL/C—Short-term exposure limit and ceiling.

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