

### Safety Data Sheet acc. to OSHA HCS (HazCom 2012)

Printing date 08/16/2023

Reviewed on 08/16/2023

## 1 Identification

- **Product identifier**
- **Trade name: As Reagent 1**
- **Catalogue number:** 424196, 471260, 471260-0
- **Application of the substance / the mixture:** Reagent for water analysis
- **Manufacturer/Supplier:**  
Tintometer Inc.  
6456 Parkland Drive  
Sarasota, FL 34243  
USA  
phone: (941) 756-6410  
fax: (941) 727-9654  
www.lovibond.us  
Made in Germany
- **Emergency telephone number:** + 1 866 928 0789 (English, French, Spanish)

## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS08 Health hazard

Toxic to Reproduction 2

H361 Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity - Repeated Exposure 2

H373 May cause damage to the brain through prolonged or repeated exposure. Route of exposure: Inhalation.



GHS09 Environment

Aquatic Chronic 1

H410 Very toxic to aquatic life with long lasting effects.



GHS07

Skin Irritation 2

H315 Causes skin irritation.

Eye Irritation 2A

H319 Causes serious eye irritation.

- **Label elements**

· **GHS label elements** The product is classified and labeled according to the Hazard Communication Standard (HCS).

- **Hazard pictograms**



GHS07



GHS08



GHS09

- **Signal word** Warning

- **Hazard-determining components of labeling:**

potassium permanganate

- **Hazard statements**

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H361 Suspected of damaging fertility or the unborn child.

H373 May cause damage to the brain through prolonged or repeated exposure. Route of exposure: Inhalation.

H410 Very toxic to aquatic life with long lasting effects.

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**Precautionary statements**

- P280 Wear protective gloves/protective clothing/eye protection.  
 P201 Obtain special instructions before use.  
 P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P308+P313 IF exposed or concerned: Get medical advice/attention.  
 P302+P352 If on skin: Wash with plenty of water.  
 P405 Store locked up.

· **Other hazards** No further relevant information available.

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** aqueous solution
- **Composition and Information on Ingredients:**  
Percent ranges are used due to the confidential product information.

CAS: 7722-64-7	potassium permanganate	≤2.5%
EINECS: 231-760-3	⚠ Oxidizing Solids 2, H272; ⚠ Toxic to Reproduction 2, H361; Specific Target Organ Toxicity - Repeated Exposure 2, H373; ⚠ Skin Corrosion 1C, H314; ⚠ Aquatic Acute 1, H400 (M=10); Aquatic Chronic 1, H410 (M=10); ⚠ Acute Toxicity - Oral 4, H302	
Index number: 025-002-00-9		
RTECS: SD 6475000		

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

### 4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:**  
Immediately rinse with plenty of water.  
If skin irritation continues, consult a doctor.
- **After eye contact:** Rinse opened eye for several minutes (at least 15 min) under running water. Then consult a doctor.
- **After swallowing:**  
Rinse out mouth and then drink 1-2 glasses of water.  
In case of symptoms consult doctor.
- **Most important symptoms and effects, both acute and delayed**  
irritations  
after swallowing of large amounts:  
gastric or intestinal disorders  
vomiting
- **Danger:** Risk of corneal clouding.
- **Indication of any immediate medical attention and special treatment needed:** No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture**  
The product is not combustible.  
Formation of toxic gases is possible during heating or in case of fire.
- **Advice for firefighters**
- **Protective equipment:**  
Wear self-contained respiratory protective device.  
Wear fully protective suit.
- **Additional information**  
Collect contaminated fire fighting water separately. It must not enter the sewage system.  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.  
Ambient fire may liberate hazardous vapours.

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### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
- **Advice for non-emergency personnel:**  
Wear protective equipment. Keep unprotected persons away.  
Do not breathe vapors/spray.  
Ensure adequate ventilation
- **Advice for emergency responders:** Protective equipment: see section 8
- **Environmental precautions:**  
Do not allow product to reach sewage system or any water course.  
Inform respective authorities in case of seepage into water course or sewage system.
- **Methods and material for containment and cleaning up:**  
Ensure adequate ventilation.  
Absorb with liquid-binding material (sand, diatomite, universal binders).  
Dispose contaminated material as waste according to section 13.
- **Reference to other sections**  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

### 7 Handling and storage

- **Precautions for safe handling**
- **Advice on safe handling:** No special precautions are necessary if used correctly.
- **Hygiene measures:**  
Avoid contact with the eyes.  
Avoid contact with the skin.  
Take off immediately all contaminated clothing.  
Wash hands before breaks and at the end of work.  
Do not eat, drink or smoke when using this product.
- **Conditions for safe storage, including any incompatibilities**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**  
Store locked up or with access restricted to technical experts or their assistants.  
Ensure that persons do not handle until all safety precautions have been read and understood.  
Protect from heat and direct sunlight.  
Protect from exposure to the light.  
Protect from humidity and water.
- **Recommended storage temperature:** 20°C +/- 5°C (approx. 68°F)
- **Specific end use(s)** No further relevant information available.

### 8 Exposure controls/personal protection

- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

**CAS: 7722-64-7 potassium permanganate**

PEL (USA)	Ceiling limit value: 5 mg/m <sup>3</sup> as Mn
REL (USA)	Short-term value: 3 mg/m <sup>3</sup> Long-term value: 1 mg/m <sup>3</sup> as Mn
TLV (USA)	Long-term value: 0.02* 0.1** mg/m <sup>3</sup> as Mn; A4, *respirable **inhalable fraction
EL (Canada)	Long-term value: 0.2; 0.02* mg/m <sup>3</sup> as Mn; R, *respirable

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Engineering measures:**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

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See item 7.

- **Personal protective equipment:**

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled.

- **Breathing equipment:** Use respiratory protective device against the effects of fume/dust/aerosol.

- **Recommended filter device for short term use:** Filter ABEK

- **Protection of hands:**

Protective gloves

Preventive skin protection by use of skin-protecting agents is recommended.

After use of gloves apply skin-cleaning agents and skin cosmetics.

- **Material of gloves**

Nitrile rubber, NBR

Recommended thickness of the material:  $\geq 0.11$  mm

- **Penetration time of glove material**

Value for the permeation: Level  $\leq 1$  (10 min)

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**

Safety glasses

Use protective goggles that have been tested and approved in accordance with government standards (like NIOSH).

- **Body protection:** Protective work clothing

- **Limitation and supervision of exposure into the environment:**

Do not allow product to reach sewage system or any water course.

## 9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **Appearance:**

- **Form / Physical state:**

Solution

- **Color:**

Violet

- **Odor:**

Odorless

- **Odor threshold:**

Not applicable.

- **pH-value at 20°C (68°F):**

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- **Melting point/freezing point:**

Not determined.

- **Initial boiling point and boiling range:** 100°C (212°F) (CAS: 7732-18-5 water)

- **Flash point:**

Not applicable.

- **Flammability (solid, gas):**

The product is not combustible.

- **Auto igniting:**

Not applicable.

- **Decomposition temperature:**

Not applicable.

- **Auto-ignition temperature:**

Product is not self-igniting.

- **Danger of explosion:**

Product does not present an explosion hazard.

- **Flammability or explosive limits:**

Lower:

Not applicable.

Upper:

Not applicable.

- **Oxidizing properties:**

none

- **Vapor Pressure:**

Not determined.

- **Density at 20°C (68°F):**

1.02 g/cm<sup>3</sup> (8.51 lbs/gal)

- **Relative density:**

Not determined.

- **Vapor density:**

Not determined.

- **Evaporation rate:**

Not determined.

- **Solubility(ies)**

- **Water:**

Fully miscible.

- **Partition coefficient (n-octanol/water):** Not applicable (mixture).

- **Viscosity:**

- **Kinematic:**

Not determined.

- **Other information**

- **Solids content:**

$\leq 2.5$  %

- **Solvent content:**

- **Organic solvents:**

0 %

- **Water:**

$\geq 97.5$  %

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### 10 Stability and reactivity

- **Reactivity** see section "Possibility of hazardous reactions"
- **Chemical stability**  
Stable at ambient temperature (room temperature).  
sensitivity to light
- **Possibility of hazardous reactions**  
Violent reactions possible with:  
The generally known reaction partners of water.
- **Conditions to avoid** Strong heating (decomposition)
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** see section 5

### 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:** Based on available data, the classification criteria are not met.

#### · LD/LC50 values that are relevant for classification:

##### CAS: 7722-64-7 potassium permanganate

Oral	LD50	750 mg/kg (rat) (RTECS)
	LDLo	100 mg/kg (human) (IUCLID)
Dermal	LD50.	>2000 mg/kg (rat) (OECD 402) (ECHA; no death of animals at this concentration, limit test)

- **Primary irritant effect:**
- **on the skin:** Causes skin irritation.
- **on the eye:**  
Causes serious eye irritation.  
Risk of corneal clouding.

#### · Information on components:

##### CAS: 7722-64-7 potassium permanganate

Irritation of skin	OECD 404	(rabbit: burns) (Merck / Burns after prolonged exposure.)
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- **Sensitization:** Based on available data, the classification criteria are not met.

#### · Information on components:

##### CAS: 7722-64-7 potassium permanganate

Sensitization	OECD 406	(guinea pig: negative)
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#### · Carcinogenic categories

##### · IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

##### · NTP (National Toxicology Program)

None of the ingredients is listed.

##### · OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

- **Other information:** see section 8 / 15

- **Synergistic Products:** None

#### · CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):

The following statements refer to the mixture:  
Toxic to Reproduction 2

- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Suspected of damaging fertility or the unborn child.

- **STOT (specific target organ toxicity) -single exposure** Based on available data, the classification criteria are not met.

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- **STOT (specific target organ toxicity) -repeated exposure**  
May cause damage to the brain through prolonged or repeated exposure. Route of exposure: Inhalation.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

**Information on components:**
**CAS: 7722-64-7 potassium permanganate**

OECD 471	(negative) (Bacterial Reverse Mutation Test - Ames test) (Escherichia coli / Salmonella typhimurium)
OECD 476	(negative) (In Vitro Mammalian Cell Gene Mutation Test)
OECD 474	(negative) (Mammalian Erythrocyte Micronucleus Test) (Merck: rat, male and female, oral, bone marrow)

**Additional toxicological information:**
**CAS: 7722-64-7 potassium permanganate**

(source: GESTIS)

Main toxic effects:

Acute: caustic effect on skin and mucous membranes, risk of serious damage to eyes

chronic: in animal experiments, changes in clinical-chemical and blood counts (as a result of liver and kidney damage), indications of neurotoxic effects

general systemic effects of manganese ions: damage to the central nervous system

Further information:

In the event of contact with the crystalline substance or concentrated solution, there is a risk of severe chemical burns and possibly irreversible eye damage. Even very diluted solutions of K. can cause violet to black discoloration of the eyes, which is reversible after a few days.

Areas of skin that have come into contact with K. are discolored brown due to the formation of poorly soluble manganese(IV) oxide.

## 12 Ecological information

**Toxicity**
**Aquatic toxicity:**
**CAS: 7722-64-7 potassium permanganate**

EC50	0.056 mg/l/48h (Daphnia magna) (ECOTOX)
EC50	0.41 mg/l/72h (Algal toxicity) (ECOTOX)
LC50	0.1 mg/l/96h (fish) (Ictalurus catus / ECOTOX)

**Other information:**

The following applies to manganese ions: toxic to water organisms.  
In flowing waters, depending on the mixture, moderate to high toxic effect.

**Persistence and degradability .**
**Other information:**

Mixture of inorganic compounds.

Methods for the determination of biodegradability are not applicable to inorganic substances.

**Bioaccumulative potential**

Pow = n-octanol/wasser partition coefficient

log Pow < 1 = Does not accumulate in organisms.

**CAS: 7722-64-7 potassium permanganate**

log Pow	-1.73 (.) (calculated) (Merck)
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- **Mobility in soil** No further relevant information available.
- **Other adverse effects** Avoid transfer into the environment.

## 13 Disposal considerations

**Waste treatment methods**
**Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

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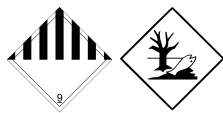
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Hand over to hazardous waste disposers.

- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

### 14 Transport information

· UN-Number	
· DOT	none
· IMDG, IATA	UN3082
· UN proper shipping name	
· DOT	none
· IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (POTASSIUM PERMANGANATE), MARINE POLLUTANT
· IATA	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (POTASSIUM PERMANGANATE)
· Transport hazard class(es)	
· DOT	
· Class	none
· IMDG, IATA	
	
· Class	9 Miscellaneous dangerous substances and articles
· Label	9
· Packing group	
· DOT	none
· IMDG, IATA	III
· Environmental hazards:	
· Marine pollutant:	Symbol (fish and tree)
· Special marking (IATA):	Symbol (fish and tree)
· Special precautions for user	Warning: Miscellaneous dangerous substances and articles
· Hazard identification number (Kemler code):	90
· EMS Number:	F-A,S-F
· Segregation groups	(SGG14) Permanganates
· Stowage Category	A
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· IMDG	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml

### 15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

#### Section 355 (Extremely hazardous substances):

None of the ingredients is listed.

#### Section 313 (Specific toxic chemical listings):

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<b>· TSCA (Toxic Substances Control Act):</b>	
All components have the value ACTIVE.	
<b>· Hazardous Air Pollutants</b>	
CAS: 7722-64-7	potassium permanganate
<b>· Proposition 65</b>	
<b>· Chemicals known to cause cancer:</b>	
None of the ingredients is listed.	
<b>· Chemicals known to cause reproductive toxicity for females:</b>	
None of the ingredients is listed.	
<b>· Chemicals known to cause reproductive toxicity for males:</b>	
None of the ingredients is listed.	
<b>· Chemicals known to cause developmental toxicity:</b>	
None of the ingredients is listed.	
<b>· New Jersey Right-to-Know List:</b>	
CAS: 7722-64-7	potassium permanganate
<b>· New Jersey Special Hazardous Substance List:</b>	
None of the ingredients is listed.	
<b>· Pennsylvania Right-to-Know List:</b>	
CAS: 7722-64-7	potassium permanganate
<b>· Pennsylvania Special Hazardous Substance List:</b>	
CAS: 7722-64-7	potassium permanganate
	E
<b>· EPA (Environmental Protection Agency)</b>	
CAS: 7722-64-7	potassium permanganate
	D
<b>· NIOSH-Ca (National Institute for Occupational Safety and Health)</b>	
None of the ingredients is listed.	
<b>· Information about limitation of use:</b>	
Observe national regulations where applicable:	
Employment restrictions concerning young persons must be observed.	
Employment restrictions concerning pregnant and lactating women must be observed.	
<b>· Chemical safety assessment:</b> A Chemical Safety Assessment has not been carried out.	

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

### · Relevant phrases

H272 May intensify fire; oxidizer.  
H302 Harmful if swallowed.  
H314 Causes severe skin burns and eye damage.  
H361 Suspected of damaging fertility or the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H400 Very toxic to aquatic life.  
H410 Very toxic to aquatic life with long lasting effects.

· **Recommended restriction of use:** professional/industrial use only

· **Version number / date of revision:** 1 / 08/16/2023

### · Abbreviations and acronyms:

OECD: Organisation for Economic Co-operation and Development  
STOT: specific target organ toxicity  
SE: single exposure  
RE: repeated exposure  
EC50: half maximal effective concentration  
IC50: half maximal inhibitory concentration  
NOEL or NOEC: No Observed Effect Level or Concentration  
ACGIH® - American Conference of Governmental Industrial Hygienists  
•A1 - Confirmed human carcinogen  
•A2 - Suspected human carcinogen  
•A3 - Confirmed animal carcinogen with unknown relevance to humans  
•A4 - Not classifiable as a human carcinogen  
•A5 - Not suspected as a human carcinogen

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IARC - International Agency for Research on Cancer

- Group 1 - Carcinogenic to humans
- Group 2A - Probably carcinogenic to humans
- Group 2B - Possibly carcinogenic to humans
- Group 3 - Not classifiable as to carcinogenicity to humans
- Group 4 - Probably not carcinogenic to humans

NTP - National Toxicology Program, U.S. Department of Health and Human Services

- Group K - Known to be Human Carcinogens
- Group R - Reasonably Anticipated to be Human Carcinogens

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety &amp; Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Oxidizing Solids 2: Oxidizing solids – Category 2

Acute Toxicity - Oral 4: Acute toxicity – Category 4

Skin Corrosion 1C: Skin corrosion/irritation – Category 1C

Skin Irritation 2: Skin corrosion/irritation – Category 2

Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A

Toxic to Reproduction 2: Reproductive toxicity – Category 2

Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

### • Sources

Data arise from safety data sheets, reference works and literature.

ECHA: European CHemicals Agency <http://echa.europa.eu>

ECOTOX Database

GESTIS- Stoffdatenbank (Substance Database, Germany)

IUCLID (International Uniform Chemical Information Database)

RTECS (Registry of Toxic Effects of Chemical Substances )