Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking
   Product identifier:
   Product name: 0.2mol/L(1N)-Potassium permanganate solution
   Product code(SDS NO): A0081E-1

Details of the supplier of the safety data sheet
   Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
   Address: 3-1, Honmachibashi, Chuo-ku, Osaka 540-0029, JAPAN
   Division: Safety Management Dept. of Chemicals
   Telephone number: +81-6-6946-8061
   FAX: +81-6-6946-1607
   e-mail address: kagakuhinanzenkanri@kishida.co.jp

2. Hazards identification
   GHS classification and label elements of the product
   Classification of the substance or mixture
   HEALTH HAZARDS
   Skin corrosion/irritation: Category 2
   Serious eye damage/eye irritation: Category 1
   Germ cell mutagenicity: Category 2
   Reproductive toxicity: Category 2
   Specific target organ toxicity - repeated exposure: Category 2(nerve/nervous system; respiratory apparatus/system)
   ENVIRONMENT HAZARDS
   Hazardous to the aquatic environment - acute hazard: Category 2
   Hazardous to the aquatic environment - long-term hazard: Category 2
   (Note) GHS classification without description: Not applicable/Out of classification/Not classifiable

Label elements

Signal word: Danger

HAZARD STATEMENT
   Causes skin irritation
   Causes serious eye damage
   Suspected of causing genetic defects
   Suspected of damaging fertility or the unborn child
   May cause damage to organs through prolonged or repeated exposure
   Toxic to aquatic life
   Toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENT
   Prevention
   Avoid release to the environment.
   Do not breathe dust/fume/gas/mist/vapors/spray.
   Wash contaminated parts thoroughly after handling.
   Wear protective gloves.
   Wear eye protection/face protection.
Response
Collect spillage.
Get medical advice/attention if you feel unwell.

IF ON SKIN: Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Disposal
Dispose of contents/container in accordance with local/national regulation.

3. Composition/information on ingredients
Mixture/Substance selection:
Mixture
Ingredient name: Potassium permanganate
Content(%): 3.2
Chemical formula: KMnO4
Chemicals No, Japan: 1-446
CAS No.: 7722-64-7
MW: 158.03

Ingredient name: Water
Content(%): 97
Chemical formula: H2O
CAS No.: 7732-18-5
MW: 18.02
ECNO: 231-791-2

Note: The figures shown above are not the specifications of the product.

4. First-aid measures
Descriptions of first-aid measures
General measures
Get medical attention/advice if you feel unwell.

IF INHALED
Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.

IF ON SKIN (or hair)
Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.

IF IN EYES
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

IF SWALLOWED
Rinse mouth.
Call a POISON CENTER or doctor/physician if you feel unwell.
5. Fire-fighting measures
   Extinguishing media
   Suitable extinguishing media
       Use appropriate extinguishing media suitable for surrounding facilities.
   Specific hazards arising from the substance or mixture
       Containers may explode when heated.
       Fire may produce irritating, corrosive and/or toxic gases.
   Advice for firefighters
       Specific fire-fighting measures
           Evacuate non-essential personnel to safe area.
       Special protective equipment and precautions for fire-fighters
           Wear fire/flame resistant/retardant clothing.
           Wear protective gloves/protective clothing/eye protection/face protection.
           Firefighters should wear self-contained breathing apparatus with full face piece operated positive pressure mode.

6. Accidental release measures
   Personnel precautions, protective equipment and emergency procedures
       Ventilate area after material pick up is complete.
       Wear proper protective equipment.
   Methods and materials for containment and cleaning up
       Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.
   Preventive measures for secondary accident
       Collect spillage.

7. Handling and storage
   Precautions for safe handling
       Preventive measures
           (Exposure Control for handling personnel)
           Do not breathe dust/fume/gas/mist/vapors/spray.
           (Protective measures against fire and explosion)
           Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
           Exhaust/ventilator
           Exhaust/ventilator should be available.
   Safety treatments
       Avoid contact with skin.
       Avoid contact with eyes.
   Safety Measures/Incompatibility
       Wear protective gloves, protective clothing or face protection.
       Wear eye protection/face protection.
       When using do not eat, drink or smoke.
   Conditions for safe storage, including any incompatibilities
       Recommendation for storage
           Keep container tightly closed.
           Store in a cool, dry place. Do not store in direct sunlight.
8. Exposure controls/personal protection
   Control parameters
   Adopted value
   (Potassium permanganate)
   ACGIH(2012) TWA: 0.02mg–Mn/m3(R); 0.1mg–Mn/m3(I) (CNS impair)

Exposure controls
   Appropriate engineering controls
   Do not use in areas without adequate ventilation.
   Eye wash station should be available.
   Washing facilities should be available.

Individual protection measures
   Respiratory protection
   Wear respiratory protection.
   Hand protection
   Wear protective gloves.
   Eye protection
   Wear eye/face protection.

Safety and Health measures
   Wash ⋯ thoroughly after handling.
   Take off contaminated clothing and wash it before reuse.

9. Physical and Chemical Properties
   Information on basic physical and chemical properties

   Physical properties
   Appearance: Liquid
   Color: Purple
   Odor data N.A.

   Phase change temperature
   Initial Boiling Point/Boiling point data N.A.
   Melting point/Freezing point data N.A.
   Decomposition temperature data N.A.
   Flash point data N.A.
   Auto-ignition temperature data N.A.
   Explosive properties data N.A.
   Vapor pressure data N.A.
   Vapor density data N.A.
   Specific gravity/Density: 1.03g/cm3
   Solubility
   Solubility in water: Miscible
   n–Octanol /water partition coefficient data N.A.

10. Stability and Reactivity
    Chemical stability
    Stable under normal storage/handling conditions.

    Possibility of hazardous reactions
    (Potassium permanganate)
    Decomposes on heating. This produces toxic gases and irritating fumes. The substance is a
    strong oxidant. It reacts with combustible and reducing materials. This generates fire and
    explosion hazard. Reacts violently with powdered metals. This generates fire hazard. (ICSC
    0672)

    Conditions to avoid
11. Toxicological Information
Information on toxicological effects
Acute toxicity
   Acute toxicity (Oral)
   [GHS Cat. Japan, base data]
   (Potassium permanganate)
   rat LD50=379 mg/kg (NITE risk assessment, 2008)
Irritant properties
   Skin corrosion/irritation
   [GHS Cat. Japan, base data]
   (Potassium permanganate)
   highly corrosive (HSDB, 2014)
   Serious eye damage /irritation
   [GHS Cat. Japan, base data]
   (Potassium permanganate)
   highly corrosive (HSDB, 2014)
No Allergenic and sensitizing effects data available
Germ cell mutagenicity
   [GHS Cat. Japan, base data]
   (Potassium permanganate) cat.2; CICAD 12, 1999
Carcinogenicity
   (Potassium permanganate)
   ACGIH−A4(2012) : Not Classifiable as a Human Carcinogen (Inorganic Mn)
Reproductive toxicity
   [GHS Cat. Japan, base data]
   (Potassium permanganate) cat.2; EHC 17, 1981; ATSDR, 2012
No Teratogenic effects data available
Delayed and immediate effects and also chronic effects from short- and long-term exposure
STOT
   STOT−single exposure
   [cat.3(resp. irrit.)]
   [Japan published data]
   (Potassium permanganate) Respiratory tract irritation ( PATTY 6th, 2012 )
STOT−repeated exposure
   [cat.1]
   [Japan published data]
   (Potassium permanganate) nerve/nervous system; respiratory apparatus/system ( NITE risk primary assessment, 2008; ATSDR, 2012 )
No Aspiration hazard data available

12. Ecological Information
Ecotoxicity
Aquatic toxicity
   Toxic to aquatic life
   Toxic to aquatic life with long lasting effects
Aquatic acute toxicity component(s) data
   [GHS Cat. Japan, base data]
(Potassium permanganate) Crustacea (Calanoida) LC50 = 0.185 mg/L/96hr (0.0765 mg Mn/L) (MOE, Japan, 2008)

Water solubility (Potassium permanganate) 6.4 g/100 ml (20°C) (ICSC, 2003)

No Persistence and degradability data available
Bioaccumulative potential (Potassium permanganate) BCF < 81 (Check & Review, Japan)

No Mobility in soil data available
Ozone depleting chemical data not available

13. Disposal considerations

Waste treatment methods

Avoid release to the environment (− if this is not the intended use).
Dispose of contents/container in accordance with local/national regulation.

14. Transport Information

UN number: 3082
UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Transport hazard class(es): 9
Packing group: III
ERG GUIDE NO.: 171
Special provisions NO.: 274; 331; 335; 375; A97; A158; A197

Environmental hazards

MARPOL Annex V – Substances Harmful to Marine Environment
Hazardous to the aquatic environment – long-term hazard: cat.1, 2
Potassium permanganate

Transport in bulk according to Annex II of MARPOL73/78 and IBC Code
Non Noxious Liquid ; Cat. OS
Water

15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture
US major regulations
TSCA
Potassium permanganate; Water

Other regulatory information
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. Other information

GHS classification and labelling
Skin Irrit. 2: H315 Causes skin irritation
Eye Dam. 1: H318 Causes serious eye damage
Muta. 2: H341 Suspected of causing genetic defects
Repr. 2: H361 Suspected of damaging fertility or the unborn child
STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure
Aquatic Acute 2: H401 Toxic to aquatic life
Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects

Reference Book
- Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN
- Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th ed., 2015 UN
- Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)
- 2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
- 2017 TLVs and BEIs. (ACGIH)

Supplier's data/information

General Disclaimer
This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It is advised to make their own tests to determinate the safety and suitability of each such product or combination for their own purposes.

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products’ properties.

The GHS classification data given here is based on current Japan official data (NITE published in 2016).