Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking
   Product identifier:
   Product name: 0.005mol/L(N/40)-Potassium permanganate solution
   SDS No.: A0086E-2
   Details of the supplier of the safety data sheet
   Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
   Address: 3-1, Honmachibashi, Chuo-ku, Osaka, 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
   (Note) GHS classification without description: Not classified/Classification not possible
   Label elements
   No GHS label element
   No Signal word

3. Composition/information on ingredients
   Mixture/Substance selection:
   Mixture
   Ingredient name: Potassium permanganate
   Content (%): 0.079
   Chemical formula: KMnO4
   Chemicals No., Japan: 1-446
   CAS No.: 7722-64-7
   MW: 158.03
   ECNO: 231-760-3

   Ingredient name: Water
   Content (%): 99
   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. The content of products may exceed the figures shown above.
4. First-aid measures
   Descriptions of first-aid measures
   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.
   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.
   Unsuitable extinguishing media data is not available.
   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 until material pick up is complete.
   Wear proper protective equipment.
   Environmental precautions
   Prevent spills from entering sewers, watercourses or low areas.
   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
   (Protective measures against fire and explosion)
   Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Exhaust/ventilator should be available.

Avoid contact with skin.
Avoid contact with eyes.

Safety Measures
- Wear protective gloves, protective clothing or face protection.
- When using do not eat, drink or smoke.

Any incompatibilities
- See “10. Stability and Reactivity”

Storage
- Conditions for safe storage
  Keep container tightly closed.
  Store in a cool, dry place. Do not store in direct sunlight.
- Container and packaging materials for safe handling
  Glass
  Polyethylene

8. Exposure controls/personal protection
   Control parameters
     Adopted value
     (Potassium permanganate)
     ACGIH(2012) TWA: 0.02mg–Mn/m3(R);
     TWA: 0.1mg–Mn/m3(I) (CNS impair)
   OSHA–PEL
     (Potassium permanganate)
     STEL: C 5mg–Mn/m3

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.

9. Physical and Chemical Properties
   Information on basic physical and chemical properties
   Physical state: Liquid
   Color: Purple
   Odor: None
   pH data is not available.
   Boiling point or initial boiling point data is not available.
   Boiling range data is not available.
   Melting point/Freezing point data is not available.
   Decomposition temperature data is not available.
   Flammability (gases, liquids and solids) data is not available.
   Flash point data is not available.
Auto-ignition temperature data is not available.
Lower and upper explosion limit/flammability limit data is not available.
Vapor pressure data is not available.
Relative vapor density (Air=1) data is not available.
Density and/or relative density: 1.00g/cm³
Kinematic viscosity data is not available.
Solubility:
  Solubility in water: Soluble
n-Octanol/water partition coefficient data is not available.
No Particle characteristics data is not available.

10. Stability and Reactivity
Reactivity
  Not available.
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
  Contact with incompatible materials.
  Contact with fire source.
Incompatible materials
  Reducing agents, Combustible materials, Powdered metals
Hazardous decomposition products
  Manganese compounds

11. Toxicological Information
Information on toxicological effects
Acute toxicity
  Acute toxicity (Oral)
  [GHS Cat. Japan, base data]
  (Potassium permanganate)
  rat LD₅₀=379mg/kg (NITE primary 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)
Allergenic and sensitizing effects data is not available.
Mutagenic effects data is not available.
Carcinogenicity
  (Potassium permanganate)
  ACGIH–A4(2012) : Not Classifiable as a Human Carcinogen (Inorganic Mn)
Reproductive toxicity data is not available.
12. Ecological Information
Ecotoxicity
Aquatic toxicity
Aquatic acute toxicity component(s) data
[GHS Cat. Japan, base data]
(Potassium permanganate)
Crustacea (Calanoida) LC50 = 0.185mg/L/96hr (0.0765mg–Mn/L) (MOE Japan, 2008)
Water solubility
(Potassium permanganate)
6.4 g/100 ml (20℃) (ICSC, 2003)
Persistence and degradability
Persistence and degradability data is not available.
Bioaccumulative potential
(Potassium permanganate)
BCF < 81 (Check & Review, Japan)
Mobility in soil
Mobility in soil data is not available.
Other adverse effects
Ozone depleting chemical data is not available.

13. Disposal considerations
Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging
Waste treatment methods
Dispose of contents/container in accordance with local/national regulation.

14. Transport Information
Not applicable to UN No., UN CLASS
Not applicable to IMDG Code
Not applicable to IATA Dangerous Goods Regulations
Environmental hazards
MARPOL Annex III – Prevention of pollution by harmful substances
Marine pollutants (yes/no) : no
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
   The product is not applicable to GHS classifications.
   Reference Book
   Recommendations on the TRANSPORT OF DANGEROUS GOODS 20th edit., 2017 UN
   IMDG Code, 2018 Edition (Incorporating Amendment 39–18)
   IATA Dangerous Goods Regulations (60th Edition) 2019
   Classification, labelling and packaging of substances and mixtures (table3–1 ECNO6182012)
   2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
   2019 TLVs and BEIs. (ACGIH)
   http://monographs.iarc.fr/ENG/Classification/index.php
   Supplier's data/information
   General Disclaimer
   This data sheet was created based on the information we currently have and may be revised
   according to new information. In addition, the precautions apply only to normal handling,
   and in the case of special handling, please make adequate countermeasure to maintain your
   safety.
   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
   2018).