

Safety Data Sheet

Classified According to OSHA Hazard Communication Standard (HCS)

SECTION 1: Identification

1.1. Product Identifier

Trade Name or Designation: ORP Standard, +192 mV
vs. Ag/AgCl (4M KCl sat. with AgCl filling solution)

Product Number: 5464.499

Other Identifying Product Numbers: 5464.499-16

1.2. Recommended Use and Restrictions on Use

General Laboratory Reagent

1.3. Details of the Supplier of the Safety Data Sheet

Company: Ricca Chemical Company

Address: 448 West Fork Drive

Arlington, TX 76012 USA

Telephone: 888-467-4222

1.4. Emergency Telephone Number (24 hours)

CHEMTREC (USA) 800-424-9300
CHEMTREC (International) 1+ 703-527-3887

SECTION 2: Hazard(s) Identification

2.1. Classification of the Substance or Mixture

For the full text of the Hazard and Precautionary Statements listed below, see Section 16.

| Hazard Class | Category | Hazard Statements | Precautionary Statements: |
|--|------------|-------------------|---------------------------|
| Hazardous to the Aquatic Environment (Acute) | Category 3 | H402 | P273, P501 |
| Hazardous to the Aquatic Environment (Chronic) | Category 3 | H412 | P273, P501 |

2.2. GHS Label Elements

Pictograms:

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Signal Word:

Hazard Statements:

| Hazard Number | Hazard Statement |
|---------------|--|
| H402 | Harmful to aquatic life. |
| H412 | Harmful to aquatic life with long lasting effects. |

Precautionary Statements:

| Precautionary Number | Precautionary Statement |
|----------------------|---|
| P273 | Avoid release to the environment. |
| P501 | Dispose of contents in accordance with local, state, federal and international regulations. |

2.4. Hazards not Otherwise Classified or Covered by GHS

Data not available.

SECTION 3: Composition / Information on Ingredients

3.1. Components of Substance or Mixture

| Chemical Name | Formula | Molecular Weight | CAS Number | Weight% |
|-----------------------------------|---|------------------|------------|---------|
| Water | H ₂ O | 18.01 g/mol | 7732-18-5 | 98.91 |
| Potassium Chloride | KCl | 74.55 g/mol | 7447-40-7 | 0.74 |
| Potassium Ferrocyanide Trihydrate | K ₄ Fe(CN) ₆ ·3H ₂ O | 422.39 g/mol | 14459-95-1 | 0.32 |
| Potassium Ferricyanide | K ₃ Fe(CN) ₆ | 329.24 g/mol | 13746-66-2 | < 0.1 |

SECTION 4: First-Aid Measures

4.1. General First Aid Information

Eye Contact: May cause slight irritation.

Inhalation: Not expected to require first aid. If necessary, remove to fresh air.

Skin Contact: May cause slight irritation.

Ingestion: Dilute with water or milk. Do not induce vomiting. Call a physician if necessary.

4.2. Most Important Symptoms and Effects, Acute and Delayed

Does not present any significant health hazards. Wash areas of contact with water. EYE CONTACT: May cause slight irritation. SKIN CONTACT: May cause slight irritation.

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4.3. Medical Attention or Special Treatment Needed

Irrigate immediately with large quantity of water for at least 15 minutes. Call a physician if irritation develops. Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen. Flush with plenty of water for at least 15 minutes. Call a physician if irritation develops. Dilute with water or milk. Do not induce vomiting. Call a physician if necessary.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing Media

Use any means suitable for extinguishing surrounding fire.

5.2. Specific Hazards Arising from the Substance or Mixture

Not considered to be a fire or explosion hazard.

5.3. Special Protective Equipment for Firefighters

Use protective clothing and breathing equipment appropriate for the surrounding fire.

SECTION 6: Accidental Release Measures

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

Wear appropriate PPE for the size and nature of the spill. As a general rule, wear safety glasses and gloves.

6.2. Cleanup and Containment Methods and Materials

Absorb with suitable material and treat as normal refuse. Small amounts of the liquid may be flushed to the drain with excess water. Always dispose of in accordance with local regulations.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling and Storage Conditions

As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage. Store in the refrigerator.

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SECTION 8: Exposure Controls / Personal Protection

8.1 Control Parameters

| Chemical Name | Limit Type | Country | Exposure Limit | Information Source |
|---|------------|---------|---|---|
| Potassium Ferricyanide (13746-66-2) | TLV-TWA | USA | "1 mg/m ³ TWA (as Fe)" As Iron salts, soluble [RR-00521-0] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Potassium Ferricyanide (13746-66-2) | TWA | USA | "5 mg/m ³ TWA (as CN)" As Cyanides [RR-00812-8] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs) |
| Potassium Ferricyanide (13746-66-2) | TLV-TWA | USA | "1 mg/m ³ TWA (as Fe)" As Iron salts, soluble [RR-00521-0] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Potassium Ferricyanide (13746-66-2) | TLV-TWA | USA | "1 mg/m ³ TWA (as Fe)" As Iron salts, soluble [RR-00521-0] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Potassium Ferricyanide (13746-66-2) | TLV-TWA | USA | 1 mg/m ³ TWA (as Fe) | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Potassium Ferricyanide (13746-66-2) | TWA | USA | 5 mg/m ³ TWA (as CN) | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs) |
| Potassium Ferrocyanide Trihydrate (14 TWA | | USA | "5 mg/m ³ TWA (as CN)" As Cyanides [RR-00812-8] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs) |
| Potassium Ferrocyanide Trihydrate (14 TLV-TWA | | USA | "1 mg/m ³ TWA (as Fe)" As Iron salts, soluble [RR-00521-0] | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Potassium Ferrocyanide Trihydrate (14 TWA | | USA | "5 mg/m ³ TWA (as CN)" As Cyanides [RR-00812-8] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs) |
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| Potassium Ferrocyanide Trihydrate (14 TLV-TWA | | USA | 1 mg/m ³ TWA (as Fe) | ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA) |
| Potassium Ferrocyanide Trihydrate (14 TWA | | USA | 5 mg/m ³ TWA (as CN) | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs) |
| Potassium Ferrocyanide Trihydrate (14 TWA | | USA | "5 mg/m ³ TWA (as CN)" As Cyanides [RR-00812-8] | U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs) |

8.2. Exposure Controls

Engineering Controls: No specific controls are needed. Normal room ventilation is adequate.

Respiratory Protection: Normal room ventilation is adequate.

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Skin Protection: Chemical resistant gloves.

Eye Protection: Safety glasses or goggles.

8.3. Personal Protective Equipment

Normal room ventilation is adequate. Chemical resistant gloves. Safety glasses or goggles.

SECTION 9: Physical and Chemical Properties

9.1. Basic Physical and Chemical Properties

Appearance: Yellow-green Liquid

Physical State: Liquid

Odor: Data not available.

Odor Threshold: Data not available.

pH: Data not available.

Melting/Freezing Point: Approximately 0°C

Initial Boiling Point/Range: Approximately 100°C - Approximately 100°C

Flash Point: Data not available.

Evaporation Rate: Data not available.

Flammability: Data not available.

Flammability/Explosive Limits: Data not available.

Vapor Pressure: Data not available.

Vapor Density: Data not available.

Relative Density: 1.0

Solubility: Miscible

Partition Coefficient: Data not available.

Auto-Ignition Temperature: Data not available.

Decomposition Temperature: Data not available.

Viscosity: Data not available.

Explosive Properties: Data not available.

Oxidizing Properties: Data not available.

SECTION 10: Stability and Reactivity

10.1. Reactivity and Chemical Stability

Stable under normal conditions of use and storage.

10.2. Possibility of Hazardous Reactions

Data not available.



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10.3. Conditions to Avoid and Incompatible Materials

Acids, Bromine Trifluoride, Sodium Nitrate, ammonia, Chromium Trioxide, Chromic Anhydride, Cupric Nitrate.

10.4. Hazardous Decomposition Products

Will not occur.

SECTION 11: Toxicological Information

11.1. Information on Toxicological Effects

Acute Toxicity - Oral Exposure:

Not applicable.

Acute Toxicity - Dermal Exposure:

Not applicable.

Acute Toxicity - Inhalation Exposure:

Not applicable.

Acute Toxicity - Other Information:

LD50, Oral Rat: (anhydrous Potassium Ferrocyanide) 6400 mg/kg, (Potassium Chloride) 2600 mg/kg; LD50, Oral, Mouse: (Potassium Ferricyanide) 2970 mg/kg, details of toxic effects not reported other than lethal dose value.

Skin Corrosion and Irritation:

Not applicable.

Serious Eye Damage and Irritation:

Not applicable.

Respiratory Sensitization:

Not applicable.

Skin Sensitization:

Not applicable.

Germ Cell Mutagenicity:

Not applicable.

Carcinogenicity:

Not applicable.

Reproductive Toxicity:

Not applicable.

Specific Target Organ Toxicity from Single Exposure:

Not applicable.

Specific Target Organ Toxicity from Repeated Exposure:

Not applicable.

Aspiration Hazard:

Not applicable.

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Additional Toxicology Information:

Data not available.

SECTION 12: Ecological Information

12.1. Ecotoxicity

Harmful to aquatic life. Avoid release to the environment. Dispose of contents in accordance with local, state, federal and international regulations. Harmful to aquatic life with long lasting effects. Avoid release to the environment. Dispose of contents in accordance with local, state, federal and international regulations.

12.2. Persistence and Degradability

Data not available.

12.3. Bioaccumulative Potential

Data not available.

12.4. Mobility in Soil

Data not available.

12.5. Other Adverse Ecological Effects

Data not available.

SECTION 13: Disposal Considerations

13.1. Waste Treatment Methods

Data not available.

SECTION 14: Transportation Information

14.1. Transportation by Land-Department of Transportation (DOT, United States of America)

Not regulated according to DOT Regulations.

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14.2. Transportation by Air - International Air Transport Association (IATA)

Not regulated according to IATA Dangerous Goods Regulations.

14.3 Transportation of Dangerous Goods (TDG, Canada)

Not regulated according to TDG Regulations.

SECTION 15: Regulatory Information

15.1. Occupational Safety and Health Administration (OSHA) Hazards

Not listed.

15.2. Superfund Amendments and Reauthorization Act (SARA) 302 Extremely Hazardous Substances

Not listed.

15.3. Superfund Amendments and Reauthorization Act (SARA) 311/312 Hazardous Chemicals

Not listed.

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15.4. Superfund Amendments and Reauthorization Act (SARA) 313 Toxic Release Inventory (TRI)

Potassium Ferricyanide (CAS # 13746-66-2): "1.0 % de minimis concentration (X+CN- where X=H+ or any other group where a formal dissociation can be made, for example, KCN or Ca(CN)₂, listed under Chemical Category N106)" As Cyanide compounds [RR-00812-8]

Potassium Ferricyanide (CAS # 13746-66-2): 1.0 % de minimis concentration (X+CN- where X=H+ or any other group where a formal dissociation can be made, for example, KCN or Ca(CN)₂, listed under Chemical Category N106)

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "1.0 % de minimis concentration (X+CN- where X=H+ or any other group where a formal dissociation can be made, for example, KCN or Ca(CN)₂, listed under Chemical Category N106)" As Cyanide compounds [RR-00812-8]

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): 1.0 % de minimis concentration (X+CN- where X=H+ or any other group where a formal dissociation can be made, for example, KCN or Ca(CN)₂, listed under Chemical Category N106)

15.5. Massachusetts Right-to-Know Substance List

Not listed.

15.6. Pennsylvania Right-to-Know Hazardous Substances

Potassium Ferricyanide (CAS # 13746-66-2): "Environmental hazard" As Cyanide compounds [RR-00812-8];

"Environmental hazard" As Iron salts [RR-04647-9]

Potassium Ferricyanide (CAS # 13746-66-2): "Environmental hazard" As Iron salts [RR-04647-9]

Potassium Ferricyanide (CAS # 13746-66-2): "Present" As Cyanide compounds [RR-00812-8];

"Present" As Iron salts [RR-04647-9]

Potassium Ferricyanide (CAS # 13746-66-2): "Present" As Iron salts [RR-04647-9]

Potassium Ferricyanide (CAS # 13746-66-2): Environmental hazard

Potassium Ferricyanide (CAS # 13746-66-2): Present

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "Environmental hazard" As Cyanide compounds [RR-00812-8]

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "Environmental hazard" As Cyanide compounds [RR-00812-8];

"Environmental hazard" As Iron salts [RR-04647-9]

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "Environmental hazard" As Iron salts [RR-04647-9]

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "Present" As Cyanide compounds [RR-00812-8]

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "Present" As Cyanide compounds [RR-00812-8];

"Present" As Iron salts [RR-04647-9]

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "Present" As Iron salts [RR-04647-9]

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): Environmental hazard

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): Present

Water (CAS # 7732-18-5): "Present" As Ethyl alcohol and water [RR-00802-6]

Water (CAS # 7732-18-5): Present

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15.7. New Jersey Worker and Community Right-to-Know Components

Potassium Ferricyanide (CAS # 13746-66-2): "SN 2308 500 lb TPQ (Category Code N106. Includes any unique chemical substance that contains the named metal as part of that chemical structure)" As Cyanide compounds [RR-00812-8]

Potassium Ferricyanide (CAS # 13746-66-2): "sn 2308" As Cyanide compounds [RR-00812-8]

Potassium Ferricyanide (CAS # 13746-66-2): sn 2308

Potassium Ferricyanide (CAS # 13746-66-2): SN 2308 500 lb TPQ (Category Code N106. Includes any unique chemical substance that contains the named metal as part of that chemical structure)

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "SN 2308 500 lb TPQ (Category Code N106. Includes any unique chemical substance that contains the named metal as part of that chemical structure)" As Cyanide compounds [RR-00812-8]

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "sn 2308" As Cyanide compounds [RR-00812-8]

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): sn 2308

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): SN 2308 500 lb TPQ (Category Code N106. Includes any unique chemical substance that contains the named metal as part of that chemical structure)

15.8. California Proposition 65

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): "male reproductive toxicity, 7/5/13" As Hydrogen cyanide salts [RR-04817-9]

15.9. Canada Domestic Substances List / Non-Domestic Substances List (DSL/NDSL)

Potassium Ferricyanide (CAS # 13746-66-2): Present (DSL)

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): Present (DSL)

Potassium Chloride (CAS # 7447-40-7): Present (DSL)

Water (CAS # 7732-18-5): Present (DSL)

15.10. United States of America Toxic Substances Control Act (TSCA) List

All components of this solution are listed as active on the TSCA Inventory or are mixtures (hydrates) of active items listed on the TSCA Inventory.

Potassium Ferricyanide (CAS # 13746-66-2): Present (ACTIVE)

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): Present (ACTIVE)

Potassium Chloride (CAS # 7447-40-7): Present (ACTIVE)

Water (CAS # 7732-18-5): Present (ACTIVE)

15.11. European Inventory of Existing Commercial Chemical Substances (EINECS), European List of Notified Chemical Substances (ELINCS), and No Longer Polymers (NLP)

Potassium Ferricyanide (CAS # 13746-66-2): 237-323-3

Potassium Ferrocyanide Trihydrate (CAS # 14459-95-1): 237-722-2

Potassium Chloride (CAS # 7447-40-7): 231-211-8

Water (CAS # 7732-18-5): 231-791-2

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SECTION 16: Other Information

16.1. Full Text of Hazard Statements and Precautionary Statements

Harmful to aquatic life with long lasting effects.

Avoid release to the environment.

Dispose of contents in accordance with local, state, federal and international regulations.

16.2. Miscellaneous Hazard Classes

Canadian Carcinogenicity Hazard Class: Not Applicable.

Physical Hazards Not Otherwise Classified (PHNOC): Not Applicable.

Health Hazards Not Otherwise Classified (HHNOC): Not Applicable.

Biohazardous Infectious Materials Hazard Class: Not Applicable.

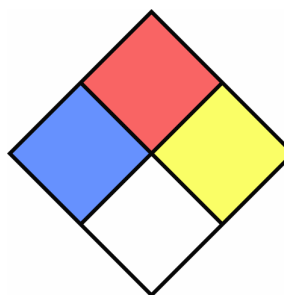
16.3. National Fire Protection Association (NFPA) Rating

Health:

Flammability:

Reactivity:

Special Hazard:



16.4. Document Revision

Last Revision Date: 2023-11-13

DISCLAIMER

When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.