

Safety Data Sheet

1. IDENTIFICATION

Product Identifier: Benedict's Reagent

Product Code(s): B1025

Synonyms: Benedict's Solution, Mixture.

Recommended Use: For manufacturing, industrial, and laboratory use only. Use as a laboratory reagent.

Uses Advised Against: Not for food, drug, or household use.

Supplier: Rocky Mountain Reagents, Inc.
4621 Technology Drive, Golden, CO 80403
Phone: (303) 762-0800 Fax: (303) 762-1240

Emergency Phone Number: For health emergency, call poison control: (800) 222-1222.

2. HAZARDS IDENTIFICATION

Hazard Classifications: Eye Damage/Irritation: Category 2A

Signal Word: WARNING

Hazard Statements: Causes serious eye irritation.

Pictograms:



Precautionary Statements:

Prevention: Wash thoroughly after handling.
Wear eye protection and face protection.

Response: If in eyes: Rinse cautiously for water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage: Not applicable.

Disposal: Not applicable.

Hazards Not Otherwise Classified:

Toxic to aquatic life with long-lasting effects. Avoid release to the environment.
May cause skin or respiratory sensitization.

Toxicity Statement:

This product consists of 14.7% ingredients whose acute toxicities are unknown.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

| Component | Common Name / Synonyms | CAS# | Chemical Formula | % by Weight |
|------------------------------|------------------------------|-----------|--|-------------|
| Water | Water | 7732-18-5 | H ₂ O | 75.3 |
| Sodium Citrate, Dihydrate | Trisodium Citrate, Dihydrate | 6132-04-3 | Na ₃ C ₆ H ₅ O ₇ • 2H ₂ O | 14.7 |
| Sodium Carbonate | Soda Ash | 497-19-8 | Na ₂ CO ₃ | 8.52 |
| Cupric Sulfate, Pentahydrate | Copper Sulfate, Pentahydrate | 7758-99-8 | CuSO ₄ • 5H ₂ O | 1.47 |

Trade Secret Statement:

Not applicable.

4. FIRST AID MEASURES

First Aid Procedures:

- Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician if symptoms occur.
- Ingestion:** Rinse mouth. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, keep head low so that vomit does not enter lungs. Never give anything by mouth to an unconscious person. Call a physician or poison control center if symptoms occur.
- Skin Contact:** Wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if symptoms occur.
- Eye Contact:** Check for and remove contact lenses, if present and easy to do. Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention if symptoms occur.
- General Advice:** Poison information centers in each state can provide additional assistance for scheduled poisons. Ensure that those providing first aid and medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Symptoms and Effects:** Inhalation may cause headache, dizziness, coughing, sneezing, wheezing, shortness of breath, laryngitis, and metal fume fever. Ingestion may cause nausea, vomiting, diarrhea, and abdominal pain. Skin contact may cause irritation and skin discoloration. Eye contact may cause serious irritation.
- Immediate Medical Care/
Special Treatment:** Get medical attention if feeling unwell or concerned. Treat symptomatically.

5. FIREFIGHTING MEASURES

- Suitable Extinguishing Media:** Water spray, dry powder, alcohol resistant foam, carbon dioxide.
- Unsuitable Extinguishing Media:** Do not use a solid (straight) water stream, as it may scatter and spread fire.
- Hazardous Combustion Products:** Carbon oxides, sodium oxides, cupric oxides, sulfur oxides.

| | |
|---|--|
| Specific Hazards: | Excessive thermal conditions may yield corrosive and/or toxic fumes. |
| Special Protective Equipment/Precautions for Firefighters: | As in any fire, wear MSHA/NIOSH-approved (or equivalent), self-contained, positive-pressure or pressure-demand breathing apparatus and full protective gear. |

6. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal Precautions and Protective Equipment: | Isolate hazard area and keep unnecessary and unprotected personnel away from the area of the leak or spill. Wear appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin, and clothing. |
| Emergency Procedures: | In case of chemical emergency, or if unsure how to address an accidental release, consult a professional (see Section 1). |
| Methods for Containment: | Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements, or confined areas. Dike the spilled material, where this is possible. Product should not be released to the environment. Contain and recover liquid when possible. |
| Methods for Cleanup: | Absorb spill with an inert material (e.g. vermiculite, dry sand, earth, cloth, or fleece) and place in a non-combustible container for reclamation or disposal. Do not flush to sewer. Clean contaminated surface thoroughly. Residues from spills can be diluted with water. Never return spills in original containers for reuse. Clean up in accordance with all applicable regulations. |

7. HANDLING AND STORAGE

| | |
|------------------|---|
| Handling: | Wear personal protective equipment (see Section 8). Provide sufficient air exchange and/or exhaust in work rooms. Avoid contact with skin, eyes, and clothing. Do not ingest. When using, do not eat, drink, or smoke. Keep away from incompatible materials (see Section 10). Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Containers of this material may be hazardous when empty, as they retain product residues. Observe all warnings and precautions listed for this product. |
| Storage: | Store in a cool, dry, ventilated area. Store away from heat and incompatible materials (see Section 10). Store in original container. Keep containers tightly closed and upright. Keep away from food, drink, and animal foodstuffs. Keep out of the reach of children. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of this product. |

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

| | | |
|------------------------------|---|----------------------------------|
| Exposure Limits: | Water: | No information found. |
| | Sodium Citrate, Dihydrate: | No information found. |
| | Sodium Carbonate: | No information found. |
| | Copper: | ACGIH (TLV): 1 mg/m ³ |
| Engineering Controls: | Ensure adequate ventilation. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. | |

Personal Protective Measures:

- Eye/Face Protection:** Wear safety glasses with side shields or safety goggles. Maintain approved eye wash station and accessible rinse facilities in work area.
- Skin Protection:** Wear appropriate chemical resistant clothing (with long sleeves) and appropriate chemical resistant gloves.
- Respiratory Protection:** An air-purifying, NIOSH-approved respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure, air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are unknown, or if any other circumstances exist where air-purifying respirators may not provide adequate protection.

Specific Requirements for Personal Protective Equipment: Ensure that glove material is compatible with this product. This information is available from glove manufacturers.

9. PHYSICAL AND CHEMICAL PROPERTIES

Unless otherwise indicated, all properties are given at 25 °C and standard pressure.

- Appearance:** Blue, transparent liquid.
- Odor:** Odorless.
- Odor Threshold:** No information found.
- Formula Weight:** Mixture.
- pH:** No information found.
- Melting/Freezing Point:** No information found.
- Boiling Point/Range:** No information found.
- Decomposition Temperature:** No information found.
- Flash Point:** Not applicable.
- Auto-ignition Temperature:** Not applicable.
- Flammability:** Not flammable.
- Flammability/Explosive Limits:** Not applicable.
- Solubility:** Miscible with water.
- Vapor Pressure:** No information found.
- Vapor Density:** No information found.
- Specific Gravity:** 1.174 (Water = 1)
- Evaporation Rate:** No information found.
- Viscosity:** No information found.
- Partition Coefficient (n-octanol/water):** No information found.

10. STABILITY AND REACTIVITY

- Reactivity Data:** No information found.
- Chemical Stability:** Stable under normal conditions.

| | |
|--|---|
| Conditions to Avoid: | Excessive heat, incompatible materials. |
| Incompatible Materials: | Oxidizers, metals, strong acids, strong bases. |
| Hazardous Decomposition Products: | Carbon oxides, sodium oxides, cupric oxides, sulfur oxides. |
| Possibility of Hazardous Reactions: | May react vigorously or violently with the incompatible materials listed above. Excessive thermal conditions may yield hazardous decomposition products listed above. |
| Hazardous Polymerization: | Will not occur. |

11. TOXICOLOGICAL INFORMATION

| | | | | | | | | | |
|-------------------------------|---|--------|-----------------|----------------------------|-----------------------|-------------------|--|-------------------------------|--|
| Routes of Exposure: | Inhalation, ingestion, skin contact, eye contact. | | | | | | | | |
| Acute Effects: | Harmful if exposed to the eyes. May be harmful if swallowed, inhaled, or exposed to the skin. May affect the blood, heart, and central nervous system. May cause skin discoloration. | | | | | | | | |
| Chronic Effects: | Prolonged or repeated exposure may cause liver effects, kidney effects, and allergic reaction. | | | | | | | | |
| Toxicological Data: | <table> <tr> <td>Water:</td><td>Not applicable.</td></tr> <tr> <td>Sodium Citrate, Dihydrate:</td><td>No information found.</td></tr> <tr> <td>Sodium Carbonate:</td><td> LD₅₀ Oral, Rat: 4090 mg/kg LC₅₀ Inhalation, Rat: 5070 mg/L 2 h Causes moderate eye irritation based on animal data. Causes mild skin irritation based on animal data. </td></tr> <tr> <td>Cupric Sulfate, Pentahydrate:</td><td> LD₅₀ Oral, Rat: 300 mg/kg LD₅₀ Dermal, Rabbit: > 2000 mg/kg Causes skin and eye irritation based on animal data. </td></tr> </table> | Water: | Not applicable. | Sodium Citrate, Dihydrate: | No information found. | Sodium Carbonate: | LD ₅₀ Oral, Rat: 4090 mg/kg LC ₅₀ Inhalation, Rat: 5070 mg/L 2 h Causes moderate eye irritation based on animal data. Causes mild skin irritation based on animal data. | Cupric Sulfate, Pentahydrate: | LD ₅₀ Oral, Rat: 300 mg/kg LD ₅₀ Dermal, Rabbit: > 2000 mg/kg Causes skin and eye irritation based on animal data. |
| Water: | Not applicable. | | | | | | | | |
| Sodium Citrate, Dihydrate: | No information found. | | | | | | | | |
| Sodium Carbonate: | LD ₅₀ Oral, Rat: 4090 mg/kg LC ₅₀ Inhalation, Rat: 5070 mg/L 2 h Causes moderate eye irritation based on animal data. Causes mild skin irritation based on animal data. | | | | | | | | |
| Cupric Sulfate, Pentahydrate: | LD ₅₀ Oral, Rat: 300 mg/kg LD ₅₀ Dermal, Rabbit: > 2000 mg/kg Causes skin and eye irritation based on animal data. | | | | | | | | |
| Symptoms of Exposure: | Irritation, coughing, sneezing, wheezing, shortness of breath, headache, dizziness, laryngitis, metal fume fever, abdominal pain, nausea, vomiting, diarrhea. | | | | | | | | |
| Carcinogenic Effects: | No component of this product is considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. | | | | | | | | |

12. ECOLOGICAL INFORMATION

| | | | | | | | | | |
|-------------------------------|---|--------|-----------------|----------------------------|-----------------------|-------------------|--|-------------------------------|---|
| Ecotoxicological Data: | <table> <tr> <td>Water:</td><td>Not applicable.</td></tr> <tr> <td>Sodium Citrate, Dihydrate:</td><td>No information found.</td></tr> <tr> <td>Sodium Carbonate:</td><td> EC₅₀, Water Flea (<i>Daphnia magna</i>): 265 mg/L 48 h LC₅₀, Bluegill (<i>Lepomis macrochirus</i>): 300 mg/L 96 h </td></tr> <tr> <td>Cupric Sulfate, Pentahydrate:</td><td> LC₅₀, Rainbow Trout (<i>Oncorhynchus mykiss</i>): 3200 mg/L 120 h EC₅₀, Water Flea (<i>Daphnia magna</i>): 0.024 mg/L 48 h </td></tr> </table> | Water: | Not applicable. | Sodium Citrate, Dihydrate: | No information found. | Sodium Carbonate: | EC ₅₀ , Water Flea (<i>Daphnia magna</i>): 265 mg/L 48 h LC ₅₀ , Bluegill (<i>Lepomis macrochirus</i>): 300 mg/L 96 h | Cupric Sulfate, Pentahydrate: | LC ₅₀ , Rainbow Trout (<i>Oncorhynchus mykiss</i>): 3200 mg/L 120 h EC ₅₀ , Water Flea (<i>Daphnia magna</i>): 0.024 mg/L 48 h |
| Water: | Not applicable. | | | | | | | | |
| Sodium Citrate, Dihydrate: | No information found. | | | | | | | | |
| Sodium Carbonate: | EC ₅₀ , Water Flea (<i>Daphnia magna</i>): 265 mg/L 48 h LC ₅₀ , Bluegill (<i>Lepomis macrochirus</i>): 300 mg/L 96 h | | | | | | | | |
| Cupric Sulfate, Pentahydrate: | LC ₅₀ , Rainbow Trout (<i>Oncorhynchus mykiss</i>): 3200 mg/L 120 h EC ₅₀ , Water Flea (<i>Daphnia magna</i>): 0.024 mg/L 48 h | | | | | | | | |

Persistence and Degradability: Some components may bioaccumulate. May not be readily biodegradable.

Environmental Effects: Toxic to aquatic organisms. May adversely affect the pH of aquatic ecosystems. Avoid exposure to the environment.

13. DISPOSAL INFORMATION

Disposal Instructions: Dispose of this material and its container to an approved waste collection point. Minimize exposure to product waste (see Section 8). Do not dispose unused waste down drains or into sewers. All wastes must be handled in accordance with local, state, and federal regulations.

Contaminated Packaging: Because emptied containers may retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

Waste Codes: No information found.

14. TRANSPORT INFORMATION

DOT: Not regulated.

Environmental Hazard Regulations: Cupric Sulfate, Pentahydrate: IMDG Marine Pollutant

Other Transport Precautions: No information found.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

OSHA: This product is not considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Inventory: All components of this product are on the U.S. TSCA Inventory.

U.S. EPCRA (SARA Title III):

Section 302: No information found.

Sections 311/312:

| Hazard Category | List (Yes/No) |
|----------------------------------|---------------|
| Section 311 – Hazardous Chemical | Yes |
| Immediate Hazard | Yes |
| Delayed Hazard | No |
| Fire Hazard | No |
| Pressure Hazard | No |
| Reactivity Hazard | No |

Section 313: No information found.

CERCLA Reportable Quantities: Copper Sulfate, Anhydrous: 10 lb

International Inventories:

| Country or Region | Inventory Name | On Inventory (Yes/No)* |
|-------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | Yes |
| Korea | Existing Chemicals List (ECL) | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |

*A "Yes" indicates that the listed components of this product comply with the inventory requirements administered by the governing country or region.

16. OTHER INFORMATION**Disclaimer:**

Rocky Mountain Reagents, Inc. provides the information in this Safety Data Sheet in the belief that it is reliable but assumes no responsibility for its completeness or accuracy. The physical properties reported in this SDS are obtained from literature and do not constitute product specifications. Rocky Mountain Reagents, Inc. makes and gives no representations or warranties with respect to the information contained herein or the product to which it refers, whether express, implied, or statutory, including without limitation, warranties of accuracy, completeness, merchantability, non-infringement, performance, safety, suitability, stability, and fitness for a particular purpose. No warranty against infringement of any patent, copyright or trademark is made or implied. This SDS is intended only as a guide to the appropriate handling of the material by a properly trained person. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. Accordingly, Rocky Mountain Reagents, Inc. assumes no liability whatsoever for the use of or reliance upon this information including results obtained, incidental or consequential damages, or lost profits.

Issue Date:

July 28, 2017

Reason for Revision:

Product Identifier updated in Section 1.