

## Section 1 Identification

Page E1 of E2

**INNOVATING SCIENCE**® by Aldon  
 "Cutting edge science for the classroom"

221 Rochester Street  
 Avon, NY 14414-9409  
 (585) 226-6177

**CHEMTREC 24 Hour Emergency  
 Phone Number (800) 424-9300**  
 For laboratory and industrial use only.  
 Not for drug, food or household use.

|                |                         |
|----------------|-------------------------|
| <b>Product</b> | ACETATE BUFFER SOLUTION |
|----------------|-------------------------|

|                 |      |
|-----------------|------|
| <b>Synonyms</b> | None |
|-----------------|------|

## Section 2 Hazards identification

**Signal word:** WARNING**Pictograms:** No symbol required**Target organs:** None known**GHS Classification:**

Eye irritation (Category 2B)

**GHS Label information: Hazard statement:**

H320: Causes eye irritation.

**Precautionary statement:**

P264: Wash hands thoroughly after handling.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313: If eye irritation persists: Get medical attention.

**Hazards not otherwise classified:**

Health hazards not otherwise classified (HHNOC) - Not Known

Physical hazards not otherwise classified (PHNOC) - Not Known

## Section 3 Composition / information on ingredients

| Chemical Name  | CAS #     | %      | EINECS    |
|----------------|-----------|--------|-----------|
| Water          | 7732-18-5 | 79.54% | 231-791-2 |
| Sodium acetate | 127-09-3  | 14.76% | 204-823-8 |
| Acetic acid    | 64-19-7   | 5.7%   | 200-580-7 |

## Section 4 First aid measures

**INGESTION:** MAY BE HARMFUL IF SWALLOWED. Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person.

**INHALATION:** MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT IRRITATION. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**EYE CONTACT:** CAUSES EYE IRRITATION. Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

**SKIN ABSORPTION:** MAY CAUSE SKIN IRRITATION. Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention.

## Section 5 Fire fighting measures

**Suitable Extinguishing Media:** Carbon dioxide, dry chemical, dry sand, alcohol foam.**Protective Actions for Fire-fighters:** In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.**Specific Hazards:** During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This chemical reacts violently with strong oxidizers, generating a fire and explosion hazard. Reacts violently with strong bases, strong acids and many other compounds.

## Section 6 Accidental release measures

**Personal Precautions:** Evacuate personnel to safe area. Use proper personal protective equipment as indicated in Section 8. Provide adequate ventilation.**Environmental Precautions:** Avoid runoff into storm sewers and ditches which lead to waterways.**Containment and Cleanup:** Remove all sources of ignition. Absorb with inert dry material, sweep or vacuum up and place in a suitable container for proper disposal. Wash spill area with soap and water.



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Page E1 of E2

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|         |                 |
|---------|-----------------|
| Product | L+ASCORBIC ACID |
|---------|-----------------|

|          |           |
|----------|-----------|
| Synonyms | Vitamin C |
|----------|-----------|

## Section 2 Hazards identification

This substance or mixture has not been classified as hazardous according to the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals.

**Signal word:** None required

**Pictograms:** No symbol required

**Target organs:** None known

**GHS Classification:** None required

**GHS Label information: Hazard statement:** None required

**Precautionary statement:** None required

**Precautionary statement(s):**

Do not breathe dust. Do not get in eyes, on skin, or on clothing. Wear protective gloves/protective clothing/eye protection/face protection. Wash hands thoroughly after handling. Get medical attention if you feel unwell.

**Hazards not otherwise classified:**

Health hazards not otherwise classified (HHNOC) - Combustible dust

Physical hazards not otherwise classified (PHNOC) - Not Known

## Section 3 Composition / information on ingredients

| Chemical Name | CAS #   | %    | EINECS    |
|---------------|---------|------|-----------|
| Ascorbic acid | 50-81-7 | 100% | 200-066-2 |

## Section 4 First aid measures

**INGESTION:** Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person.

**INHALATION:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**EYE CONTACT:** Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

**SKIN ABSORPTION:** Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention.

## Section 5 Fire fighting measures

**Suitable Extinguishing Media:** Use any media suitable for extinguishing supporting fire

**Protective Actions for Fire-fighters:** In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.

**Specific Hazards:** During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

## Section 6 Accidental release measures

**Personal Precautions:** Evacuate personnel to safe area. Use proper personal protective equipment as indicated in Section 8. Provide adequate ventilation.

**Environmental Precautions:** Avoid runoff into storm sewers and ditches which lead to waterways.

**Containment and Cleanup:** Sweep or vacuum up and place in a suitable container for proper disposal. Wash spill area with soap and water.

**Precautions for Safe Handling:** Read label on container before using. Do not wear contact lenses when working with chemicals. Keep out of reach of children. Avoid contact with eyes, skin and clothing. Do not inhale dusts. Use with adequate ventilation. Avoid ingestion. Wash thoroughly after handling. Remove and wash clothing before reuse.

**Conditions for Safe Storage:** Store in a cool, dry, well-ventilated area away from incompatible substances. Protect from light, air and moisture.

## Section 8 Exposure controls / personal protection

| Exposure Limits: | Chemical Name | ACGIH (TLV)      | OSHA (PEL)       | NIOSH (REL)      |
|------------------|---------------|------------------|------------------|------------------|
|                  | Ascorbic acid | None established | None established | None established |

**Engineering controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles, or faceshield, lab coat or apron, appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

**Respiratory protection:** None should be needed in normal laboratory handling at room temperatures. If dusty conditions prevail, work in fume hood or wear a NIOSH/MSHA-approved respirator.

## Section 9 Physical and chemical properties

|  |   |   |
|--|---|---|
| <b>Appearance:</b> Solid, white, crystalline powder.<br><b>Odor:</b> Nearly odorless.<br><b>Odor threshold:</b> Data not available.<br><b>pH:</b> Data not available.<br><b>Melting / Freezing point:</b> 190-192°C (374-377°F)<br><b>Boiling point:</b> Decomposes<br><b>Flash point:</b> Non flammable | <b>Evaporation rate ( = 1):</b> Data not available<br><b>Flammability (solid/gas):</b> Data not available.<br><b>Explosion limits: Lower / Upper:</b> Non flammable<br><b>Vapor pressure (mm Hg):</b> Negligible<br><b>Vapor density (Air = 1):</b> Data not available<br><b>Relative density (Specific gravity):</b> 1.65<br><b>Solubility(ies):</b> 30% by weight at 20°C in water. | <b>Partition coefficient:</b> Data not available<br><b>Auto-ignition temperature:</b> 660°C (1220°F)<br><b>Decomposition temperature:</b> Data not available.<br><b>Viscosity:</b> Data not available.<br><b>Molecular formula:</b> C <sub>6</sub> H <sub>8</sub> O <sub>6</sub><br><b>Molecular weight:</b> 176.13 |
|--|---|---|

## Section 10 Stability and reactivity

**Chemical stability:** Stable **Hazardous polymerization:** Will not occur.

**Conditions to avoid:** Excessive temperatures, moisture, air and light.

**Incompatible materials:** Alkalies, iron, copper, water, oxidizing agents, acids.

**Hazardous decomposition products:** Oxides of carbon.

## Section 11 Toxicological information

**Acute toxicity:** Data not available

**Skin corrosion/irritation:** Data not available

**Serious eye damage/irritation:** Data not available

**Respiratory or skin sensitization:** Data not available

**Germ cell mutagenicity:** Data not available

**Carcinogenicity:** Data not available

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Ca Prop 65: This product does not contain any chemicals known to the State of California to cause cancer or reproductive toxicity.

**Reproductive toxicity:** Data not available

**STOT-single exposure:** Data not available

**STOT-repeated exposure:** Data not available

**Aspiration hazard:** Data not available

**Potential health effects:**

Inhalation: Inhalation may cause cough and sore throat.

Ingestion: May cause gastrointestinal irritation.

Skin: May cause mild irritation with redness.

Eyes: May cause mild irritation with redness and pain.

**Signs and symptoms of exposure:** See Potential health effects above.

**Additional information: RTECS #:** CI7650000

## Section 12 Ecological information

**Toxicity to fish:** No data available

**Toxicity to daphnia and other aquatic invertebrates:** No data available

**Toxicity to algae:** No data available

**Persistence and degradability:** No data available

**Bioaccumulative potential:** No data available

**Mobility in soil:** No data available

**PBT and vPvB assessment:** No data available

**Other adverse effects:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

## Section 13 Disposal considerations

These disposal guidelines are intended for the disposal of catalog-size quantities only. Federal regulations may apply to empty container. State and/or local regulations may be different. Dispose of in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency.

## Section 14 Transport information

**UN/NA number:** Not applicable

**Shipping name:** Not Regulated

**Hazard class:** Not applicable

**Packing group:** Not applicable

**Reportable Quantity:** No

**Marine pollutant:** No

**Exceptions:** Not applicable

**2020 ERG Guide #** Not applicable

## Section 15 Regulatory information

A chemical is considered to be listed if the CAS number for the anhydrous form is on the Inventory list.

| Component     | TSCA   | CERCLA (RQ) | RCRA code  | DSL    | NDSL       | CA Prop 65   |
|---------------|--------|-------------|------------|--------|------------|--|
| Ascorbic acid | Listed | Not listed  | Not listed | Listed | Not listed | This product does not contain any chemicals known to the State of California to cause cancer or reproductive toxicity. |

## Section 16 Other information

The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. NTP: National Toxicology Program, IARC: International Agency for Research on Cancer, OSHA: Occupational Safety and Health Administration, STOT: Specific Target Organ Toxicity, SE: Single Exposure, RE: Repeated Exposure, ERG: Emergency Response Guidebook.

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Page E1 of E2

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|                |                                     |
|----------------|-------------------------------------|
| <b>Product</b> | FERRIC CHLORIDE, 0.1 MOLAR SOLUTION |
|----------------|-------------------------------------|

|                 |                                    |
|-----------------|------------------------------------|
| <b>Synonyms</b> | Iron(III) Chloride, Water Solution |
|-----------------|------------------------------------|

## Section 2 Hazards identification

**Signal word:** DANGER**Pictograms:** GHS05 / GHS07**Target organs:** Eyes, Skin, Respiratory system, Liver, Gastrointestinal tract**GHS Classification:**

Corrosive to metals (Category 1)

Acute toxicity, oral (Category 4)

Skin irritation (Category 2)

Eye damage (Category 1)

**GHS Label information: Hazard statement:**

H290: May be corrosive to metals.

H302: Harmful if swallowed.

H315: Causes skin irritation.

H318: Causes serious eye damage.

**Precautionary statement:**

P234: Keep only in original container.

P406: Store in corrosive resistant container with a resistant inner liner.

P264: Wash hands thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P301+P330+P312: IF SWALLOWED: Rinse mouth. Call a POISON CENTER or doctor if you feel unwell.

P302+P352: IF ON SKIN: Wash with plenty of water and soap.

P332+P313: If skin irritation occurs: Get medical attention.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310: Immediately call a POISON CENTER or doctor.

P362+P364: Take off contaminated clothing and wash it before reuse.

P501: Dispose of contents/container to a licensed chemical disposal agency in accordance with local/regional/national regulations.

**Hazards not otherwise classified:**

Health hazards not otherwise classified (HHNOC) - Not Known

Physical hazards not otherwise classified (PHNOC) - Not Known

## Section 3 Composition / information on ingredients

| Chemical Name                | CAS #      | %       | EINECS                |
|------------------------------|------------|---------|-----------------------|
| Water                        | 7732-18-5  | 97.297% | 231-791-2             |
| Ferric chloride, hexahydrate | 10025-77-1 | 2.703%  | 231-729-4 [anhydrous] |

## Section 4 First aid measures

**INGESTION:** HARMFUL IF SWALLOWED. MAY CAUSE LIVER OR KIDNEYS DAMAGE. Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person.

**INHALATION:** MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT IRRITATION. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**EYE CONTACT:** MAY CAUSE EYE DAMAGE. Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

**SKIN ABSORPTION:** MAY BE HARMFUL IF ABSORBED THROUGH SKIN. CAUSES SKIN IRRITATION. Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention.

## Section 5 Fire fighting measures

**Suitable Extinguishing Media:** Use any media suitable for extinguishing supporting fire.

**Protective Actions for Fire-fighters:** In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.

**Specific Hazards:** In fire conditions, water may evaporate from this solution which may cause hazardous decomposition products to be formed as dust or fume.

## Section 6 Accidental release measures

**Personal Precautions:** Evacuate personnel to safe area. Use proper personal protective equipment as indicated in Section 8. Provide adequate ventilation.

**Environmental Precautions:** Avoid runoff into storm sewers and ditches which lead to waterways.

**Containment and Cleanup:** Absorb with inert dry material, sweep or vacuum up and place in a suitable container for proper disposal. Wash spill area with soap and water.

**Precautions for Safe Handling:** Read label on container before using. Do not wear contact lenses when working with chemicals. Keep out of reach of children. Avoid contact with eyes, skin and clothing. Do not inhale vapors, spray or mist. Use with adequate ventilation. Avoid ingestion. Wash thoroughly after handling. Remove and wash clothing before reuse.

**Conditions for Safe Storage:** Store in a cool, well-ventilated area away from incompatible substances.

## Section 8 Exposure controls / personal protection

| Exposure Limits: | Chemical Name              | ACGIH (TLV)              | OSHA (PEL) | NIOSH (REL)              |
|------------------|----------------------------|--------------------------|------------|--------------------------|
|                  | Iron salts, soluble, as Fe | TWA: 1 mg/m <sup>3</sup> | No listing | TWA: 1 mg/m <sup>3</sup> |

**Engineering controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles, or faceshield, lab coat or apron, appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

**Respiratory protection:** None should be needed in normal laboratory handling at room temperatures. If misty conditions prevail, work in fume hood or wear a NIOSH/MSHA-approved respirator.

## Section 9 Physical and chemical properties

|   |   |   |
|---|---|---|
| <b>Appearance:</b> Liquid. Yellow-orange                          | <b>Evaporation rate ( Water = 1):</b> <1                              | <b>Partition coefficient:</b> Data not available      |
| <b>Odor:</b> No odor.   | <b>Flammability (solid/gas):</b> Data not available.                  | <b>Auto-ignition temperature:</b> Data not available  |
| <b>Odor threshold:</b> Data not available.                        | <b>Explosion limits: Lower / Upper:</b> Data not available            | <b>Decomposition temperature:</b> Data not available. |
| <b>pH:</b> 2 (0.1M solution)                                      | <b>Vapor pressure (mm Hg):</b> 14 (water)                             | <b>Viscosity:</b> Data not available.                 |
| <b>Melting / Freezing point:</b> Approximately 0°C (32°F) (water) | <b>Vapor density (Air = 1):</b> 0.7 (water)                           | <b>Molecular formula:</b> Mixture                     |
| <b>Boiling point:</b> Approximately 100°C (212°F) (water)         | <b>Relative density (Specific gravity):</b> Approximately 1.0 (water) | <b>Molecular weight:</b> Mixture                      |
| <b>Flash point:</b> Data not available                            | <b>Solubility(ies):</b> Complete in water.                            |   |

## Section 10 Stability and reactivity

**Chemical stability:** Stable **Hazardous polymerization:** Will not occur.

**Conditions to avoid:** Excessive temperatures which cause evaporation.

**Incompatible materials:** Water, oxidizing agents, metals, strong bases, reducing agents, alcohols.

**Hazardous decomposition products:** Hydrogen gas on contact with metals.

## Section 11 Toxicological information

**Acute toxicity:** Oral-rat LD50: 1,872 mg/kg [Ferric chloride, hexahydrate]

**Skin corrosion/irritation:** Data not available

**Serious eye damage/irritation:** Data not available

**Respiratory or skin sensitization:** Data not available

**Germ cell mutagenicity:** Data not available

**Carcinogenicity:** Data not available

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Ca Prop 65: This product does not contain any chemicals known to the State of California to cause cancer or reproductive toxicity.

**Reproductive toxicity:** Data not available

**STOT-single exposure:** Data not available

**STOT-repeated exposure:** Data not available

**Aspiration hazard:** Data not available

**Potential health effects:**

Inhalation: May be corrosive or irritating to the nose, throat and respiratory tract. Symptoms may include burning sensation, coughing, shortness of breath, lung inflammation and pulmonary edema.

Ingestion: May cause severe liver or kidneys damage. May also cause gastrointestinal damage.

Skin: May cause severe irritation and/or burns.

Eyes: May cause severe irritation, tearing, blurred vision, burns, severe damage, and permanent blindness.

**Signs and symptoms of exposure:** See Potential health effects above. Exercise appropriate procedures to minimize potential hazards.

**Additional information:** RTECS #: LJ9100000 (Anhydrous)

## Section 12 Ecological information

**Toxicity to fish:** No data available

**Toxicity to daphnia and other aquatic invertebrates:** No data available

**Toxicity to algae:** No data available

**Persistence and degradability:** No data available

**Bioaccumulative potential:** No data available

**Mobility in soil:** No data available

**PBT and vPvB assessment:** No data available

**Other adverse effects:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

## Section 13 Disposal considerations

These disposal guidelines are intended for the disposal of catalog-size quantities only. Federal regulations may apply to empty container. State and/or local regulations may be different. Dispose of in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency.

## Section 14 Transport information

**UN/NA number:** UN2582

**Shipping name:** Ferric chloride, solution

**Hazard class:** 8

**Packing group:** III

**Reportable Quantity:** 1,000 lbs (454 kg)

**Marine pollutant:** No

**Exceptions:** Limited quantity equal to or less than 5 Lt

**2020 ERG Guide #** 154

## Section 15 Regulatory information

A chemical is considered to be listed if the CAS number for the anhydrous form is on the Inventory list.

| Component                  | TSCA   | CERLCA (RQ)        | RCRA code  | DSL    | NDSL       | CA Prop 65   |
|----------------------------|--------|--------------------|------------|--------|------------|--|
| Ferric chloride, anhydrous | Listed | 1,000 lbs (454 kg) | Not listed | Listed | Not listed | This product does not contain any chemicals known to the State of California to cause cancer or reproductive toxicity. |

## Section 16 Other information

The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. NTP: National Toxicology Program, IARC: International Agency for Research on Cancer, OSHA: Occupational Safety and Health Administration, STOT: Specific Target Organ Toxicity, SE: Single Exposure, RE: Repeated Exposure, ERG: Emergency Response Guidebook.

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|                |                                    |
|----------------|------------------------------------|
| <b>Product</b> | 1,10-PHENANTHROLINE, 0.1% SOLUTION |
|----------------|------------------------------------|

|                 |      |
|-----------------|------|
| <b>Synonyms</b> | None |
|-----------------|------|

## Section 2 Hazards identification

**Signal word:** WARNING  
**Pictograms:** No symbol required  
**Target organs:** None

**GHS Classification:**  
 Acute toxicity, oral (Category 5)

**GHS Label information: Hazard statement:**  
 H303: May be harmful if swallowed.

**Precautionary statement:**  
 P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.

**Hazards not otherwise classified:**

Health hazards not otherwise classified (HHNOC) - Not Known  
 Physical hazards not otherwise classified (PHNOC) - Not Known

## Section 3 Composition / information on ingredients

| Chemical Name                    | CAS #     | %     | EINECS                |
|----------------------------------|-----------|-------|-----------------------|
| Water                            | 7732-18-5 | 99.9% | 231-791-2             |
| 1,10-Phenanthroline, monohydrate | 5144-89-8 | 0.1%  | 200-629-2 (anhydrous) |

## Section 4 First aid measures

**INGESTION:** MAY BE HARMFUL IF SWALLOWED. Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person.

**INHALATION:** MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT IRRITATION. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**EYE CONTACT:** MAY CAUSE EYE IRRITATION. Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

**SKIN ABSORPTION:** MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION. Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention.

## Section 5 Fire fighting measures

**Suitable Extinguishing Media:** Use any media suitable for extinguishing supporting fire.

**Protective Actions for Fire-fighters:** In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective gear. Use water spray to keep fire-exposed containers cool.

**Specific Hazards:** In fire conditions, water may evaporate from this solution which may cause hazardous decomposition products to be formed as dust or fume.

## Section 6 Accidental release measures

**Personal Precautions:** Evacuate personnel to safe area. Use proper personal protective equipment as indicated in Section 8. Provide adequate ventilation.

**Environmental Precautions:** Avoid runoff into storm sewers and ditches which lead to waterways.

**Containment and Cleanup:** Absorb with inert dry material, sweep or vacuum up and place in a suitable container for proper disposal. Wash spill area with soap and water.

**Precautions for Safe Handling:** Read label on container before using. Do not wear contact lenses when working with chemicals. Keep out of reach of children. Avoid contact with eyes, skin and clothing. Do not inhale vapors, spray or mist. Use with adequate ventilation. Avoid ingestion. Wash thoroughly after handling. Remove and wash clothing before reuse.

**Conditions for Safe Storage:** Store in a cool, well-ventilated area away from incompatible substances.

## Section 8 Exposure controls / personal protection

| Exposure Limits: | Chemical Name       | ACGIH (TLV)     | OSHA (PEL)      | NIOSH (REL)     |
|------------------|---------------------|-----------------|-----------------|-----------------|
|                  | 1,10-Phenanthroline | Not established | Not established | Not established |

**Engineering controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles, or faceshield, lab coat or apron, appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

**Respiratory protection:** None should be needed in normal laboratory handling at room temperatures. If misty conditions prevail, work in fume hood or wear a NIOSH/MSHA-approved respirator.

## Section 9 Physical and chemical properties

|   |   |   |
|---|---|---|
| <b>Appearance:</b> Clear, colorless liquid.<br><b>Odor:</b> Mild characteristic odor.<br><b>Odor threshold:</b> Data not available.<br><b>pH:</b> Data not available.<br><b>Melting / Freezing point:</b> Approximately 0°C (32°F) (water)<br><b>Boiling point:</b> Approximately 100°C (212°F) (water)<br><b>Flash point:</b> Data not available | <b>Evaporation rate ( Water = 1):</b> <1<br><b>Flammability (solid/gas):</b> Data not available.<br><b>Explosion limits: Lower / Upper:</b> Data not available<br><b>Vapor pressure (mm Hg):</b> 14 (water)<br><b>Vapor density (Air = 1):</b> 0.7 (water)<br><b>Relative density (Specific gravity):</b> Approximately 1.0 (water)<br><b>Solubility(ies):</b> Complete in water. | <b>Partition coefficient:</b> Data not available<br><b>Auto-ignition temperature:</b> Data not available<br><b>Decomposition temperature:</b> Data not available.<br><b>Viscosity:</b> Data not available.<br><b>Molecular formula:</b> Mixture<br><b>Molecular weight:</b> Mixture |
|---|---|---|

## Section 10 Stability and reactivity

**Chemical stability:** Stable **Hazardous polymerization:** Will not occur.

**Conditions to avoid:** Excessive temperatures which cause evaporation.

**Incompatible materials:** Strong oxidizers, acids.

**Hazardous decomposition products:** Carbon oxides and nitrogen oxides.

## Section 11 Toxicological information

**Acute toxicity:** Oral-rat LD50: 132 mg/kg [1,10-Phenanthroline]

**Skin corrosion/irritation:** Data not available

**Serious eye damage/irritation:** Data not available

**Respiratory or skin sensitization:** Data not available

**Germ cell mutagenicity:** Data not available

**Carcinogenicity:** Data not available

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Ca Prop 65: This product does not contain any chemicals known to the State of California to cause cancer or reproductive toxicity.

**Reproductive toxicity:** Data not available

**STOT-single exposure:** Data not available

**STOT-repeated exposure:** Data not available

**Aspiration hazard:** Data not available

**Potential health effects:**

Inhalation: May be harmful by inhalation.

Ingestion: May be harmful if swallowed.

Skin: Contact may cause irritation.

Eyes: Contact may cause irritation.

**Signs and symptoms of exposure:** To the best of our knowledge the chemical, physical and toxicological properties have not been thoroughly investigated. Specific data is not available. Exercise appropriate procedures to minimize potential hazards.

**Additional information:** RTECS #: SF8437000 [1,10-Phenanthroline]

## Section 12 Ecological information

**Toxicity to fish:** No data available

**Toxicity to daphnia and other aquatic invertebrates:** No data available

**Toxicity to algae:** No data available

**Persistence and degradability:** No data available

**Bioaccumulative potential:** No data available

**Mobility in soil:** No data available

**PBT and vPvB assessment:** No data available

**Other adverse effects:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

## Section 13 Disposal considerations

These disposal guidelines are intended for the disposal of catalog-size quantities only. Federal regulations may apply to empty container. State and/or local regulations may be different. Dispose of in accordance with all local, state and federal regulations or contract with a licensed chemical disposal agency.

## Section 14 Transport information

**UN/NA number:** Not applicable

**Shipping name:** Not Regulated

**Hazard class:** Not applicable

**Packing group:** Not applicable

**Reportable Quantity:** No

**Marine pollutant:** No

**Exceptions:** Not applicable **2020 ERG Guide #** Not applicable

## Section 15 Regulatory information

A chemical is considered to be listed if the CAS number for the anhydrous form is on the Inventory list.

| Component           | TSCA   | CERLCA (RQ) | RCRA code  | DSL    | NDSL       | CA Prop 65   |
|---------------------|--------|-------------|------------|--------|------------|--|
| 1,10-Phenanthroline | Listed | Not listed  | Not listed | Listed | Not listed | This product does not contain any chemicals known to the State of California to cause cancer or reproductive toxicity. |

## Section 16 Other information

The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. NTP: National Toxicology Program, IARC: International Agency for Research on Cancer, OSHA: Occupational Safety and Health Administration, STOT: Specific Target Organ Toxicity, SE: Single Exposure, RE: Repeated Exposure, ERG: Emergency Response Guidebook.