Safety Data Sheet

Benedict's Solution, Quantitative

CAROLINA®
www.carolina.com

Section 1 Product Description

Product Name:	Benedict's Solution, Quantitative
Recommended Use:	Science education applications
Synonyms:	None known.
Distributor:	Carolina Biological Supply Company, 2700 York Road, Burlington, NC 27215-3398
Chemical Information:	800-227-1150 (8am-5pm (ET) M-F)
Chemtrec:	800-424-9300 (Transportation Spill Response 24 hours)

Section 2 Hazard Identification

Classification of the chemical in accordance with paragraph (d) of §1910.1200;

Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

GHS Classification:
Hazardous to the aquatic environment - Acute Category 3, Hazardous to the aquatic environment - Chronic Category 3

Acute Toxicity Oral Contains	19.64 % of the mixture consists of ingredient(s) of unknown toxicity
Acute Toxicity Dermal Contains	19.64 % of the mixture consists of ingredient(s) of unknown toxicity
Acute Toxicity Inhalation Vapor Contains	30.18 % of the mixture consists of ingredient(s) of unknown toxicity
Acute Toxicity Inhalation Dust/Mist Contains	21.44 % of the mixture consists of ingredient(s) of unknown toxicity

Section 3 Composition / Information on Ingredients

Chemical Name	CAS #	%
Water	7732-18-5	69.86
Sodium Citrate, Dihydrate	6132-04-3	13.96
Potassium Thiocyanate	333-20-0	8.74
Sodium Carbonate, Monohydrate	5968-11-6	6.08
Copper (II) Sulfate, 5-Hydrate	7758-99-8	1.26
Potassium Ferrocyanide, Trihydrate	14459-95-1	0.1

Section 4 First Aid Measures

Emergency and First Aid Procedures

Inhalation:	In case of accident by inhalation: remove casualty to fresh air and keep at rest.
Eyes:	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Ingestion:	If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Section 5 Firefighting Procedures

Extinguishing Media:	Use media suitable to extinguish surrounding fire.
Fire Fighting Methods and Protection:	Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.
Fire and/or Explosion Hazards:	Fire or excessive heat may produce hazardous decomposition products.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

Section 6 Spill or Leak Procedures

Steps to Take in Case Material Is Released or Spilled:

No health affects expected from the clean-up of this material if contact can be avoided. Follow personal protective equipment recommendations found in Section 8 of this MSDS
Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.
Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits. Avoid the generation of dusts during clean-up.
Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation. Do not allow the spilled product to enter public drainage system or open waterways.

Section 7 Handling and Storage

Handling: Avoid release to the environment. Avoid contact with skin and eyes. After contact with skin, wash immediately with plenty of water. Keep container tightly closed in a cool place. Keep away from oxidizing materials and strong acids. Avoid contact with clothing. Do not breathe gas/fumes/vapor/spray. Harmful if swallowed.

Storage: Keep container tightly closed in a cool, well-ventilated place.
Material is hygroscopic (absorbs moisture) and deliquescent (absorbs moisture to become soution).

Section 8 Protection Information

	ACGIH		OSHA PEL	
Chemical Name	**(TWA)**	**(STEL)**	**(TWA)**	**(STEL)**
Sodium Citrate, Dihydrate	N/A	N/A	N/A	N/A
Potassium Thiocyanate	N/A	N/A	5 mg/m3 TWA (as CN)	N/A
Sodium Carbonate, Monohydrate	N/A	N/A	N/A	N/A
Copper (II) Sulfate, 5-Hydrate	1 mg/m3 TWA (dust and mist, as Cu)	N/A	N/A	N/A
Potassium Ferrocyanide, Trihydrate	1 mg/m3 TWA (as Fe)	N/A	5 mg/m3 TWA (as CN)	N/A

Control Parameters

Engineering Measures: No exposure limits exist for the constituents of this product. General room ventilation might be required to maintain operator comfort under normal conditions of use.

Personal Protective Equipment (PPE): Lab coat, apron, eye wash, safety shower.

Respiratory Protection: No respiratory protection required under normal conditions of use.

Respirator Type(s): None required where adequate ventilation is provided. If airborne concentrations are above the applicable exposure limits, use NIOSH/MSHA approved respiratory protection.

Eye Protection: Wear chemical splash goggles when handling this product. Have an eye wash station available.

Skin Protection: Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.

Gloves: No information available

Section 9 Physical Data

Formula: See Section 3
Molecular Weight: No data available
Appearance: Blue Liquid
Odor: None
Odor Threshold: No data available
pH: No data available
Melting Point: No data available
Boiling Point: Estimated 100 C
Flash Point: No data available
Vapor Pressure: No data available
Evaporation Rate (BuAc=1): No data available
Vapor Density (Air=1): No data available
Specific Gravity: 1.145
Solubility in Water: Soluble
Log Pow (calculated): No data available
Autoignition Temperature: No data available
Decomposition Temperature: No data available
Viscosity: No data available

Flammable Limits in Air: No data available

Percent Volatile by Volume: No data available

Section 10 Reactivity Data

Reactivity: Not generally reactive under normal conditions.
Chemical Stability: Stable under normal conditions.
Conditions to Avoid: None known.
Incompatible Materials: Water-reactive materials, Strong oxidizing agents, Acids, Strong alkalies, Hot Aluminum, Fluoride, Hydroxylamine, Hypobromite, Strong reducing agents, Magnesium
Hazardous Polymerization: Will not occur

Section 11 Toxicity Data

Routes of Entry Inhalation, ingestion, eye or skin contact.
Symptoms (Acute): Alkalosis, Nausea, Diarrhea, Metabolic Acidosis, Depressed Activity, Slurred Speech, Respiratory disorders, Eye Irritation, Vomiting, Hypotension, Hepatitis
Delayed Effects: No data available

Acute Toxicity:

Chemical Name	CAS Number	Oral LD50	Dermal LD50	Inhalation LC50
Water	7732-18-5	Oral LD50 Rat Not applicable 90 g/kg		
Sodium Citrate, Dihydrate	6132-04-3	No data available	No data available	No data available
Potassium Thiocyanate	333-20-0	Oral LD50 Rat 854 mg/kg		
Sodium Carbonate, Monohydrate	5968-11-6			
Copper (II) Sulfate, 5-Hydrate	7758-99-8	Oral LD50 Rat 300 mg/kg	Dermal LD50 Rat > 2000 mg/kg	
Potassium Ferrocyanide, Trihydrate	14459-95-1	Oral LD50 Rat 3616 mg/kg		

Carcinogenicity:

Chemical Name	CAS Number	IARC	NTP	OSHA
Sodium Citrate, Dihydrate	6132-04-3	Not listed	Not listed	Not listed
Sodium Carbonate, Monohydrate	5968-11-6	Not listed	Not listed	Not listed
Copper (II) Sulfate, 5-hydrate	7758-99-8	Not listed	Not listed	Not listed
Potassium Ferrocyanide, Trihydrate	14459-95-1	Not listed	Not listed	Not listed

Chronic Effects:
Mutagenicity: No evidence of a mutagenic effect.
Teratogenicity: No evidence of a teratogenic effect (birth defect).
Sensitization: No evidence of a sensitization effect.
Reproductive: No evidence of negative reproductive effects.
Target Organ Effects:
Acute: Kidneys, Liver, Gastrointestinal tract, No data available
Chronic: Tumorigenic data cited.

Section 12 Ecological Data

Overview: Slight ecological hazard. In high concentrations, this product may be dangerous to plants and/or wildlife.
Mobility: This material is expected to have high mobility in soil. It absorbs weakly to most soil types.
Persistence: Dissolved into water, Adsorbs to soil., Chemically Transformed
Bioaccumulation: No data
Degradability: No data
Other Adverse Effects: No data

Chemical Name	CAS Number	Eco Toxicity
Water	7732-18-5	No data available
Sodium Citrate, Dihydrate	6132-04-3	Not applicable
Potassium Thiocyanate	333-20-0	Not applicable
Sodium Carbonate, Monohydrate	5968-11-6	
Copper (II) Sulfate, 5-Hydrate	7758-99-8	96 HR LC50 PIMEPHALES PROMELAS 0.6752 MG/L [STATIC]
Potassium Ferrocyanide, Trihydrate	14459-95-1	Not applicable

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Section 13 Disposal Information

Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations. Always contact a permitted waste disposer (TSD) to assure compliance.

Waste Disposal Code(s): Not Determined

Section 14 Transport Information

Ground - DOT Proper Shipping Name:
Not regulated for transport by US DOT

Air - IATA Proper Shipping Name:
Not regulated for air transport by IATA.

Section 15 Regulatory Information

TSCA Status: All components in this product are on the TSCA Inventory.

Chemical Name	CAS Number	§ 313 Name	§ 304 RQ	CERCLA RQ	§ 302 TPQ	CAA 112(2) TQ
Sodium Citrate, Dihydrate	6132-04-3	No	No	No	No	No
Potassium Thiocyanate	333-20-0	No	No	No	No	No
Sodium Carbonate, Monohydrate	5968-11-6	No	No	No	No	No
Copper (II) Sulfate, 5-hydrate	7758-99-8	No	No	No	No	No
Potassium Ferrocyanide, Trihydrate	14459-95-1	No	No	No	No	No

Section 16 Additional Information

Revised: 05/08/2013 **Replaces: None** **Printed: 06-21-2013**

The information provided in this (Material) Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the (Material) Safety Data Sheet.

Glossary

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
CAS	Chemical Abstract Service Number	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
DOT	U.S. Department of Transportation	ppm	Parts per million
IARC	International Agency for Research on Cancer	RCRA	Resource Conservation and Recovery Act
N/A	Not Available	SARA	Superfund Amendments and Reauthorization Act
		TLV	Threshold Limit Value
		TSCA	Toxic Substances Control Act
		IDLH	Immediately dangerous to life and health