**** MATERIAL SAFETY DATA SHEET ****

Benedict's Reagent Qualitative Solution
90749

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Benedict's Reagent Qualitative Solution
Catalog Numbers:
S71369, S71369-1, S713691ND
Synonyms:
Benedict's Sugar Test Reagent.
Company Identification: Fisher Scientific
1 Reagent Lane
Fairlawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
68-04-2	Sodium citrate	15.1	200-675-3
497-19-8	Sodium carbonate anhydrous	8.7	207-838-8
7732-18-5	Water	74.7	231-791-2
7758-98-7	Cupric sulfate	1.5	231-847-6

Hazard Symbols: XN
Risk Phrases: 22

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear light-blue liquid.
Warning! May cause allergic skin reaction. Harmful if swallowed. Can cause adverse reproductive effects. May cause liver and kidney damage. May cause severe eye and skin irritation with possible burns. May cause blood abnormalities. May cause respiratory and digestive tract irritation and possible burns.
Target Organs: Blood, kidneys, liver.

Potential Health Effects

Eye:
May result in corneal injury. Contact with eyes may cause severe irritation, and possible eye burns. Contact with the eye may cause conjunctivitis, edema of the eyelids, and ulceration and turbidity of cornea.

Skin:
May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Contact with the skin may cause severe irritation and necrosis. May produce eczematoid contact dermatitis.

Ingestion:
Ingestion of large amounts of copper salts may cause bloody stools and vomit, low blood pressure, jaundice and coma. Ingestion of sodium citrate may produce alkalosis and may cause tetany or depress the heart by decreasing the calcium level of the blood. Ingestion may produce corrosion of the GI tract, vomiting, diarrhea, circulatory collapse, and death. Ingestion of copper compounds may produce systemic toxic effects to the kidney and liver and central nervous excitation followed by depression.

Inhalation:
Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May produce local necrosis of the mucous membranes.

Chronic:
Repeated exposure may cause sensitization dermatitis. Individuals with Wilson's disease are unable to metabolize copper. Thus, copper accumulates in various tissues and may result in liver, kidney, and brain damage. Chronic copper poisoning in man is recognized in the form of Wilson's disease. May cause allergic skin reaction in some individuals.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:
Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin:
Get medical aid immediately. Flush skin with plenty of water for at

least 15 minutes while removing contaminated clothing and shoes.

Ingestion:
Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation:
Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician:
Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Extinguishing Media:
Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Autoignition Temperature:Not available.
Flash Point: Not available.
Explosion Limits, lower:Not available.
Explosion Limits, upper:Not available.
NFPA Rating: (estimated) Health: 2; Flammability: 0; Instability: 1

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:
Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Provide ventilation. Cover with dry earth, dry sand, or other non-combustible material followed with plastic sheet to minimize spreading and contact with water.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:
Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage:
Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:
Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Sodium citrate	none listed	none listed	none listed
Sodium carbonate anhydrous	none listed	none listed	none listed
Water	none listed	none listed	none listed
Cupric sulfate	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists, as Cu) (listed under ** no name **).	1 mg/m3 TWA (dusts and mists) (listed under ** no name **).1 mg/m3 TWA (as Cu) (listed under ** no name **).100 mg/m3 IDLH (dusts and mists) (listed under ** no name **).100 mg/m3 IDLH (dusts and mists, as Cu) (listed	0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists) (listed under ** no name **).

OSHA Vacated PELs:
Sodium citrate:
No OSHA Vacated PELs are listed for this chemical.
Sodium carbonate anhydrous:
No OSHA Vacated PELs are listed for this chemical.
Water:
No OSHA Vacated PELs are listed for this chemical.
Cupric sulfate:

0.1 mg/m3 TWA (fume, dusts, mists as Cu) (listed under ** no name **)

Personal Protective Equipment

Eyes:
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:
Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Color:	clear light-blue
Odor:	odorless
pH:	Not available.
Vapor Pressure:	14 mm Hg
Vapor Density:	0.7 (air=1)
Evaporation Rate:	>1
Viscosity:	Not available.
Boiling Point:	110-120 deg C
Freezing/Melting Point:	Not available.
Decomposition Temperature:	
Solubility in water:	Soluble.
Specific Gravity/Density:	1.145 @ 20&C
Molecular Formula:	
Molecular Weight:	

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable.
Conditions to Avoid:
Excess heat.
Incompatibilities with Other Materials:
Strong oxidizing agents, acids.
Hazardous Decomposition Products:
Carbon monoxide, oxides of sulfur, carbon dioxide.
Hazardous Polymerization: Has not been reported

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 68-04-2: GE8300000
CAS# 497-19-8: VZ4050000
CAS# 7732-18-5: ZC0110000
CAS# 7758-98-7: GL8800000
LD50/LC50:
Not available.
CAS# 497-19-8: Draize test, rabbit, eye: 100 mg/24H Moderate; Draize test, rabbit, eye: 50 mg Severe; Draize test, rabbit, skin: 500 mg/24H Mild; Inhalation, mouse: LC50 = 1200 mg/m3/2H; Inhalation, rat: LC50 = 2300 mg/m3/2H; Oral, mouse: LD50 = 6600 mg/kg; Oral, mouse: LD50 = 6600 mg/kg; Oral, rat: LD50 = 4090 mg/kg.
CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg.
CAS# 7758-98-7: Oral, mouse: LD50 = 369 mg/kg; Oral, mouse: LD50 = 87 mg/kg; Oral, rat: LD50 = 300 mg/kg; Oral, rat: LD50 = 960 mg/kg.
Not available.
Carcinogenicity:
Sodium citrate -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Sodium carbonate anhydrous -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Water -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Cupric sulfate -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
Experimental reproductive effects and mutation data have been reported for copper sulfate.
Teratogenicity:
No information available.
Reproductive Effects:
No information available.
Neurotoxicity:
No information available.
Mutagenicity:
No information available.

Other Studies:
No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste.
US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
No information available
Canadian TDG
No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 68-04-2 is listed on the TSCA inventory.
CAS# 497-19-8 is listed on the TSCA inventory.
CAS# 7732-18-5 is listed on the TSCA inventory.
CAS# 7758-98-7 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA
CERCLA Hazardous Substances and corresponding RQs
CAS# 7758-98-7: 10 lb final RQ; 4.54 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 497-19-8: acute.
CAS # 7758-98-7: acute.
Section 313
This material contains Cupric sulfate (listed as ** undefined **), 1 5%, (CAS# 7758-98-7) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 7758-98-7 is listed as a Hazardous Substance under the CWA.
CAS# 7758-98-7 is listed as a Priority Pollutant under the Clean Water Act.
CAS# 7758-98-7 is listed as a Toxic Pollutant under the Clean Water Act.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
Sodium citrate is not present on state lists from CA, PA, MN, MA, FL, or NJ.
Sodium carbonate anhydrous is not present on state lists from CA, PA, MN, MA, FL, or NJ.
Water is not present on state lists from CA, PA, MN, MA, FL, or NJ.
Cupric sulfate can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, (listed as ** no name **), Massachusetts.
California No Significant Risk Level:
None of the chemicals in this product are listed.
European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: XN
Risk Phrases:
R 22 Harmful if swallowed.
Safety Phrases:
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 28A After contact with skin, wash immediately with plenty of water.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where

possible).
WGK (Water Danger/Protection)
CAS# 68-04-2: 0
CAS# 497-19-8: 1
CAS# 7732-18-5: No information available.
CAS# 7758-98-7: 2
United Kingdom Occupational Exposure Limits
CAS# 7758-98-7: OES-United Kingdom, TWA (listed as ** undefined **): 0.2 ppm TWA (fume, as Cu); 1 mg/m3 TWA (dusts and mists, as Cu)
CAS# 7758-98-7: OES-United Kingdom, STEL (listed as ** undefined **): 2 mg/m3 STEL (dusts and mists)
United Kingdom Maximum Exposure Limits

Canada
CAS# 68-04-2 is listed on Canada's DSL List.
CAS# 497-19-8 is listed on Canada's DSL List.
CAS# 7732-18-5 is listed on Canada's DSL List.
CAS# 7758-98-7 is listed on Canada's DSL List.
WHMIS: Not available.
CAS# 68-04-2 is not listed on Canada's Ingredient Disclosure List.
CAS# 497-19-8 is listed on Canada's Ingredient Disclosure List.
CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.
CAS# 7758-98-7 is listed on Canada's Ingredient Disclosure List.
Exposure Limits
CAS# 7758-98-7: OEL-ARAB Republic of Egypt:TWA 0.1 mg(Cu)/m3 (fume)
OEL-AUSTRALIA:TWA 0.2 mg(Cu)/m3 (fume)
OEL-AUSTRALIA:TWA 1 mg(Cu)/m3 (dust)
OEL-BELGIUM:TWA 0.2 mg(Cu)/m3 (fume)
OEL-BELGIUM:TWA 1 mg(Cu)/m3 (dust)
OEL-DENMARK:TWA 0.1 mg(Cu)/m3 (fume)
OEL-DENMARK:TWA 1 mg(Cu)/m3 (dust)
OEL-FINLAND:TWA 0.2 mg(Cu)/m3 (fume)
OEL-FINLAND:TWA 1 mg(Cu)/m3
OEL-FINLAND:TWA 1 mg(Cu)/m3 (dust)
OEL-FRANCE:TWA 0.2 mg(Cu)/m3 (fume)
OEL-FRANCE:TWA 1 mg(Cu)/m3;STEL 2 mg(Cu)/m3 (dust
OEL-GERMANY:TWA 0.1 mg(Cu)/m3 (fume)
OEL-GERMANY:TWA 1 mg(Cu)/m3
OEL-GERMANY:TWA 1 mg(Cu)/m3 (dust)
OEL-HUNGARY:TWA 0.2 mg(Cu)/m3;STEL 0.4 mg(Cu)/m3 (dust)
OEL-INDIA:TWA 0.2 mg(Cu)/m3 (fume)
OEL-THE NETHERLANDS:TWA 02 mg(Cu)/m3 (fume)
OEL-THE NETHERLANDS:TWA 1 mg(Cu)/m3 (dust)
OEL-THE PHILIPPINES:TWA 1.0 mg(Cu)/m3 (fume) JAN9
OEL-POLAND:TWA 0.1 mg(Cu)/m3 (fume)
OEL-RUSSIA:STEL 0.5 mg/m3
OEL-RUSSIA:STEL 0.5 ppm (1 mg(Cu)/m3) (dust) JAN9
OEL-SWEDEN:TWA 0.2 mg(Cu)/m3 (resp. dust)
OEL-SWEDEN:TWA 0.2 mg(Cu)/m3 (fume)
OEL-SWEDEN:TWA 1 mg(Cu)/m3 (total dust)
OEL-SWITZERLAND:TWA 0.1 mg(Cu)/m3;STEL 0.2 mg(Cu)/m3 (fume)
OEL-SWITZERLAND:TWA 1 mg(Cu)/m3;STEL 1 mg(Cu)/m3
OEL-THAILAND:TWA 0.1 mg(Cu)/m3 (fume)
OEL-THAI

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 7/09/1999 Revision #3 Date: 7/07/2003

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.