

# Material Safety Data Sheet

## Benedict Quantitative Solution

ACC# 02565

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Benedict Quantitative Solution**Catalog Numbers:** S79914, S79914-1, S79914-2**Synonyms:** None**Company Identification:**

Fisher Scientific

1 Reagent Lane

Fair Lawn, 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	Percent	EINECS/ELINCS
7732-18-5	Water	60.5	231-791-2
6132-04-3	Sodium citrate dihydrate	17	unlisted
333-20-0	Potassium thiocyanate	11	206-370-1
5968-11-6	Sodium carbonate monohydrate	10	unlisted
7758-99-8	Copper (ii) sulfate pentahydrate	1.4	unlisted
497-19-8	Sodium carbonate anhydrous	-	207-838-8

**Hazard Symbols:** None listed.**Risk Phrases:** None listed.

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear liquid. **Warning!** Causes severe eye irritation. Causes skin irritation. Causes respiratory tract irritation. May cause liver and kidney damage. This substance has caused adverse reproductive and fetal effects in animals.

**Target Organs:** Kidneys, liver.

## Potential Health Effects

**Eye:** Exposure to particulates or solution may cause conjunctivitis, ulceration, and corneal abnormalities.

**Skin:** Causes skin irritation.

**Ingestion:** May cause severe digestive tract irritation with abdominal pain, nausea, vomiting and diarrhea. May cause hemorrhaging of the digestive tract.

**Inhalation:** May cause respiratory tract irritation. May cause ulceration and perforation of the nasal septum if inhaled in excessive quantities.

**Chronic:** Chronic inhalation and ingestion may cause effects similar to those of acute inhalation and ingestion. May cause liver and kidney damage. May cause reproductive and fetal effects.

## 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:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

**Antidote:** No specific antidote exists.

## 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:** For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** Not published.

## 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.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get on skin or in eyes. Do not ingest or inhale.

**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 general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed
Sodium citrate dihydrate	none listed	none listed	none listed
Potassium thiocyanate	none listed	none listed	none listed
Sodium carbonate monohydrate	none listed	none listed	none listed
Copper (ii) sulfate pentahydrate	none listed	none listed	none listed
Sodium carbonate anhydrous	none listed	none listed	none listed

**OSHA Vacated PELs:** Water: No OSHA Vacated PELs are listed for this chemical. Sodium citrate dihydrate: No OSHA Vacated PELs are listed for this chemical. Potassium thiocyanate: No OSHA Vacated PELs are listed for this chemical. Sodium carbonate monohydrate: No OSHA Vacated PELs are listed for this chemical. Copper (ii) sulfate pentahydrate: No OSHA Vacated PELs are listed for this chemical. Sodium carbonate anhydrous: No OSHA Vacated PELs are listed for this chemical.

### 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 natural rubber gloves, apron, and/or clothing.

**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

**Appearance:** clear

**Odor:** none reported

**pH:** Not available.

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:**Not available.

**Viscosity:** Not available.

**Boiling Point:** 212 deg F

**Freezing/Melting Point:**Not available.

**Decomposition Temperature:**Not available.

**Solubility:** Completely soluble in water.

**Specific Gravity/Density:**1.2

**Molecular Formula:**Mixture

**Molecular Weight:**Not available.

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable.

**Conditions to Avoid:** High temperatures, incompatible materials.

**Incompatibilities with Other Materials:** None reported.

**Hazardous Decomposition Products:** Irritating and toxic fumes and gases.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS# 7732-18-5:** ZC0110000

**CAS# 6132-04-3** unlisted.

**CAS# 333-20-0:** XL1925000

**CAS# 5968-11-6** unlisted.

**CAS# 7758-99-8:** GL8900000

**CAS# 497-19-8:** VZ4050000

**LD50/LC50:**

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

CAS# 6132-04-3:

CAS# 333-20-0:

Oral, mouse: LD50 = 590 mg/kg;

Oral, mouse: LD50 = 594 mg/kg;

Oral, rat: LD50 = 854 mg/kg;

CAS# 5968-11-6:

CAS# 7758-99-8:

Oral, mouse: LD50 = 43 mg/kg;

Oral, rat: LD50 = 300 mg/kg;

Skin, rat: LD50 = >2 gm/kg;

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/m<sup>3</sup>/2H;

Inhalation, rat: LC50 = 2300 mg/m<sup>3</sup>/2H;

Oral, mouse: LD50 = 6600 mg/kg;

Oral, mouse: LD50 = 6600 mg/kg;

Oral, rat: LD50 = 4090 mg/kg;

**Carcinogenicity:**

CAS# 7732-18-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. CAS# 6132-04-3:

Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. CAS# 333-20-0: Not listed by ACGIH,

IARC, NIOSH, NTP, or OSHA. CAS# 5968-11-6: Not listed by ACGIH, IARC, NIOSH, NTP,

or OSHA. CAS# 7758-99-8: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA. CAS# 497-

19-8: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**Epidemiology:** No information available.

**Teratogenicity:** Cupric sulfate Anhydrous: Embryo or Fetus: fetotoxicity, ivn-mouse

TDLo=3200 ug/kg. Specific Developmental Abnormalities: body wall, ivn- hamster

TDLo=2130 ug/kg; cardiovascular and central nervous system, ivn-mouse TDLo=3200

ug/kg.

**Reproductive Effects:** Cupric sulfatae Anhydrous: Fertility: post-implantation mortality,

ivn-mouse TDLo=3200 ug/kg. Paternal Effects: spermatogenesis, itt-rat TDLo=3192 ug/

kg; testes/sperm duct/epididymis, scu-mouse TDLo=12768 ug/kg.

**Neurotoxicity:** No information available.

**Mutagenicity:** Unscheduled DNA Synthesis: hamster embryo 200 umol/L Oncogenic

Transformation: hamster embryo 80 umol/L

**Other Studies:** No data available.

## Section 12 - Ecological Information

No information available.

## 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	IATA	RID/ADR	IMO	Canada TDG
<b>Shipping Name:</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.				No information available.
<b>Hazard Class:</b>	9				
<b>UN Number:</b>	UN3082				
<b>Packing Group:</b>	III				

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 7732-18-5 is listed on the TSCA inventory.

CAS# 6132-04-3 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).

CAS# 333-20-0 is listed on the TSCA inventory.

CAS# 5968-11-6 is not on the TSCA Inventory because it is a hydrate. It is considered to

be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).

CAS# 7758-99-8 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).

CAS# 497-19-8 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**

None of the chemicals in this material have an RQ.

### **SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

### **SARA Codes**

CAS # 333-20-0: acute. CAS # 5968-11-6: acute. CAS # 7758-99-8: acute, chronic. CAS # 497-19-8: acute.

### **Section 313**

This material contains Copper (ii) sulfate pentahydrate (listed as Copper), 1.4%, (CAS# 7758-99-8) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

### **Clean Air Act:**

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.  
None of the chemicals in this product are listed as Priority Pollutants under the CWA.  
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 6132-04-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 333-20-0 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 5968-11-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 7758-99-8 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 497-19-8 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

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:

Not available.

### Risk Phrases:

### Safety Phrases:

### WGK (Water Danger/Protection)

CAS# 7732-18-5: No information available.

CAS# 6132-04-3: 0

CAS# 333-20-0: No information available.

CAS# 5968-11-6: 1

CAS# 7758-99-8: 2

CAS# 497-19-8: 1

### Canada - DSL/NDSL

CAS# 7732-18-5 is listed on Canada's DSL List.

CAS# 333-20-0 is listed on Canada's DSL List.

CAS# 497-19-8 is listed on Canada's DSL List.

### Canada - WHMIS

This product has a WHMIS classification of E.

### Canadian Ingredient Disclosure List

CAS# 333-20-0 (listed as Cyanides, inorganic salts) is listed on the Canadian Ingredient Disclosure List.

CAS# 7758-99-8 (listed as Copper) is listed on the Canadian Ingredient Disclosure List.

CAS# 497-19-8 is listed on the Canadian Ingredient Disclosure List.

### Exposure Limits

CAS# 333-20-0 (listed as cyanide anion): OEL-ARAB Republic of Egypt: TW  
A 5 mg/m<sup>3</sup>; Skin OEL-AUSTRALIA: TWA 5 mg/m<sup>3</sup>; Skin OEL-AUSTRIA: TWA 5 mg/m<sup>3</sup>; Skin OEL-CZECHOSLOVAKIA: TWA 3 mg/m<sup>3</sup>; STEL 10 mg/m<sup>3</sup> JAN9 OEL-DENMARK  
: TWA 5 mg/m<sup>3</sup>; Skin OEL-FINLAND: TWA 5 mg/m<sup>3</sup>; STEL 10 mg/m<sup>3</sup> OEL-FRANCE: T  
WA 5 mg/m<sup>3</sup>; Skin OEL-GERMANY: TWA 5 mg/m<sup>3</sup>; Skin OEL-HUNGARY: TWA 0.3 mg/  
m<sup>3</sup>; STEL 0.6 mg/m<sup>3</sup>; Skin OEL-INDIA: TWA 4 mg/m<sup>3</sup>; Skin OEL-THE NETHERLAND  
S: TWA 5 mg/m<sup>3</sup>; Skin OEL-THE PHILIPPINES: TWA 5 mg/m<sup>3</sup>; Skin OEL-POLAND: T  
WA 0.3 mg/m<sup>3</sup> OEL-SWEDEN: STEL 5 mg/m<sup>3</sup>; Skin OEL-SWITZERLAND: TWA 5 mg/m<sup>3</sup>  
; STEL 10 mg/m<sup>3</sup>; Skin OEL-THAILAND: TWA 5 mg/m<sup>3</sup> OEL-UNITED KINGDOM: TWA  
5 mg/m<sup>3</sup>; Skin

CAS# 7758-99-8: OEL-ARAB Republic of Egypt: TWA 0.1 mg(Cu)/m<sup>3</sup> (fume)  
OEL-AUSTRALIA: TWA 0.2 mg(Cu)/m<sup>3</sup> (fume) OEL-AUSTRALIA: TWA 1 mg(Cu)/m<sup>3</sup>  
(dust) OEL-BELGIUM: TWA 0.2 mg(Cu)/m<sup>3</sup> (fume) OEL-BELGIUM: TWA 1 mg(Cu  
) /m<sup>3</sup> (dust) OEL-DENMARK: TWA 0.1 mg(Cu)/m<sup>3</sup> (fume) OEL-DENMARK: TWA 1 m  
g(Cu)/m<sup>3</sup> (dust) OEL-FINLAND: TWA 0.2 mg(Cu)/m<sup>3</sup> (fume) OEL-FINLAND: TWA  
1 mg(Cu)/m<sup>3</sup> OEL-FINLAND: TWA 1 mg(Cu)/m<sup>3</sup> (dust) OEL-FRANCE: TWA 0.2 m  
g(Cu)/m<sup>3</sup> (fume) OEL-FRANCE: TWA 1 mg(Cu)/m<sup>3</sup>; STEL 2 mg(Cu)/m<sup>3</sup> (dust OE  
L-GERMANY: TWA 0.1 mg(Cu)/m<sup>3</sup> (fume) OEL-GERMANY: TWA 1 mg(Cu)/m<sup>3</sup> OEL-G  
ERMANY: TWA 1 mg(Cu)/m<sup>3</sup> (dust) OEL-HUNGARY: TWA 0.2 mg(Cu)/m<sup>3</sup>; STEL 0.4  
mg(Cu)/m<sup>3</sup> (dust) OEL-INDIA: TWA 0.2 mg(Cu)/m<sup>3</sup> (fume) OEL-THE NETHERLA  
NDS: TWA 02 mg(Cu)/m<sup>3</sup> (fume) OEL-THE NETHERLANDS: TWA 1 mg(Cu)/m<sup>3</sup> (dust

) OEL-THE PHILIPPINES: TWA 1.0 mg(Cu)/m<sup>3</sup> (fume) JAN9 OEL-POLAND: TWA 0.1 mg(Cu)/m<sup>3</sup> (fume) OEL-RUSSIA: STEL 0.5 ppm (1 mg(Cu)/m<sup>3</sup>) (dust) JAN9 OEL-SWEDEN: TWA 0.2 mg(Cu)/m<sup>3</sup> (resp. dust) OEL-SWEDEN: TWA 0.2 mg(Cu)/m<sup>3</sup> (fume) OEL-SWEDEN: TWA 1 mg(Cu)/m<sup>3</sup> (total dust) OEL-SWITZERLAND: TWA 0.1 mg(Cu)/m<sup>3</sup>; STEL 0.2 mg(Cu)/m<sup>3</sup> (fume) OEL-SWITZERLAND: TWA 1 mg(Cu)/m<sup>3</sup>; STEL 1 mg(Cu)/m<sup>3</sup> OEL-THAILAND: TWA 0.1 mg(Cu)/m<sup>3</sup> (fume) OEL-THAILAND: TWA 1 mg(Cu)/m<sup>3</sup> OEL-U

## Section 16 - Additional Information

**MSDS Creation Date:** 9/02/1997

**Revision #3 Date:** 7/14/2003

*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 event shall Fisher 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 Fisher has been advised of the possibility of such damages.*