ISO9001:2000 Certified

Material Safety Data Sheet

Benedict's Quantitative Solution

Section 1 - Chemical Product and Company Identification

MSDS Name:

Benedict's Quantitative Solution

Catalog Numbers:

LC11660

Synonyms:

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name:	Percent
7732-18-5	Water	balance
6132-04-3	sodium citrate dihydrate	17
333-20-0	Potassium thiocyanate	11
5968-11-6	Sodium carbonate, monohydrate	10
7758-99-8	Cupric sulfate pentahydrate	1.4

Section 3 - Hazards Identification

Potential Health Effects

Eye:

May cause moderate eye irritation.

Skin:

May cause moderate skin irritation.

Ingestion:

Excess doses cause headache, nausea, vomiting, dizziness, fatigue, disorientation, hypotension, confusion, edema of the eyelids, delirium, blurred vision, cerebral excitement, psychotic behavior, muscle spasticity,convulsions, cyanosis,collapse and death Probable lethal dose of thiocyanate salt is 15-30 grams ingested at one time - death occurring in 10-48hrs. Fatal serum level thiocyanate 20mg/dl, with myocardial damage, focal brain damage, thyroid enlargement and thrombophlebitis.

Inhalation:

Low doses can cause headache, drowsiness, dizziness, narcosis, hypotension, visual hallucinations, confusion, cyanosis. Large doses may cause psychosis and collapse.

Chronic:

May cause dermatitis and conjunctivitis. Prolonged absorption may cause skin eruptions, coryza, dizziness, cramps, nausea, vomiting, abdominal pain, enlarged thyroid, CNS disturbances. Prolonged intake could impair calcium and iron absorption. May cause hives and abnormal bleeding may occur. The thyroid may also be enlarged. Chronic intake of copper salts will occur only in individuals with Wilson's disease. It can be fatal.

Section 4 - First Aid Measures

Eyes:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids until no evidence of chemical remains. Get medical aid at once.

Skin:

Get medical aid. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Remove contaminated clothing and shoes.

Ingestion:

Get medical aid at once. Give oxygen if respiration is depressed. If victim is conscious, medical personnel should remove by gastric lavage or emesis.

Inhalation:

Give artificial respiration if necessary. Get medical aid. Keep victim warm, at rest. Move victim to fresh air.

Notes to Physician:

Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information:

Negligible fire and explosion hazard when exposed to heat or flame. Move container if possible, cool with flooding amounts of water. No acute hazards. Avoid breathing vapors - toxic fumes of cyanide, oxides of sulfur and nitrogen can occur. Move container if possible, avoid breathing vapors or dust.

Extinguishing Media:

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

Autoignition Temperature:

No information found.

Flash Point:

No information found.

NFPA Rating:

CAS# 7732-18-5: Not published.
CAS# 6132-04-3: Not published.
CAS# 333-20-0: Not published.

CAS# 5968-11-6: Not published.
CAS# 7758-99-8: Not published.

Explosion Limits:

Lower: Upper:

Section 6 - Accidental Release Measures

General Information:

Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spills with absorbent (vermiculite, sand, fuller's earth) and place in plastic bags for later disposal. Place in labeled plastic containers for disposal, wash area down with water.

Section 7 - Handling and Storage

Handling:

Wash thoroughly after handling.

Storage:

Store capped at room temperature. Store in amber containers. Keep away from heat and incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls:

Good general ventilation should be sufficient to control airborne levels.

Exposure Limits

Chemical Name:	ACGIH	NIOSH	OSHA
Water	None of the components are on this list.	None of the components are on this list.	None of the components are on this list.
Sodium citrate dihydrate	None of the components are on this list.	None of the components are on this list.	None of the components are on this list.
Potassium thiocyanate	None of the components are on this list.	None of the components are on this list.	None of the components are on this list.
Sodium carbonate, monohydrate	None of the components are on this list.	None of the components are on this list.	None of the components are on this list.
Cupric sulfate pentahydrate	None of the components are on this list.	None of the components are on this list.	None of the components are on this list.

OSHA Vacated PELs

Personal Protective Equipment

Eyes:

Wear chemical goggles and a face shield if splashing is possible.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

Firefighting-- any self-contained breathing apparatus with full facepiece operated in pressure-demand mode. High levels- supplied-air respirator with full facepiece, helmet, or hood.

Section 9 - Physical and Chemical Properties

Physical State:	Clear liquid
Color:	Clear blue
Odor:	Odorless
pH:	Alkaline
Vapor Pressure:	14mm Hg @20°C
Vapor Density:	> air
Evaporation Rate:	< ether
Viscosity:	No information found.
Boiling Point:	> 212°F (> 100.00°C)
Freezing/Melting Point:	< 32°F (< 0.00°C)
Decomposition Temperature:	No information found.
Solubility in water:	Soluble.
Specific Gravity/Density:	1.3
Molecular Formula:	No information found.
Molecular Weight	No information found.

Section 10 - Stability and Reactivity

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Incompatible materials.

Incompatibilities with Other Materials

Nitrates, nitric acid, organic peroxides, reacts explosively or violently with perchoryl fluoride (100-200C), chlorates (explosive oxidation), acids (emits cyanide fumes), water reactive substances (oleum, sodium).

Hazardous Decomposition Products

Oxides of nitrogen, oxides of sulfur, cyanide fumes, toxic fumes of sodium, toxic oxides of carbon, toxic oxides of nitrogen, toxic oxides of sulfur, toxic fumes of cyanide.

Hazardous Polymerization

Will not occur.

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.

LD50/LC50:

CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg.
CAS# 6132-04-3:
No information found.
CAS# 333-20-0:
Oral, mouse: LD50 = 594 mg/kg
Oral, rat: LD50 = 854 mg/kg.
CAS# 5968-11-6:
No information found.
CAS# 7758-99-8:
Oral, rat: LD50 = 300 mg/kg.

Carcinogenicity:

CAS# 7732-18-5: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
CAS# 6132-04-3: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
CAS# 333-20-0: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
CAS# 5968-11-6: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.
CAS# 7758-99-8: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.

Epidemiology:

skin and eye irritant. Toxic psychotic.
LDLO: 80mg/Kg Oral-human;
500mg/Kg Oral-rabbit;
300mg/Kg Oral-frog.

Teratogenicity:

Reproductive:

Mutagenicity:

Neurotoxicity:

Section 12 - Ecological Information

No information found.

Section 13 - Disposal Considerations

Dispose of in accordance with Federal, State, and local regulations.

Section 14 - Transport Information

US DOT

Shipping Name: Not regulated.

Hazard Class:
UN Number:
Packing Group:

Material Safety Data Sheet
Benedict's Quantitative Solution

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, however, its anhydrous form is on the inventory and so this hydrate is exempt from TSCA Inventory requirements (40CFR270.3(u)(2)).
CAS# 333-20-0 is listed on the TSCA Inventory.
CAS# 5968-11-6 is not on the TSCA Inventory, however, its anhydrous form is on the inventory and so this hydrate is exempt from TSCA Inventory requirements (40CFR270.3(u)(2)).
CAS# 7758-99-8 is not listed on the TSCA Inventory. It is for research and development use only.

SARA Reportable Quantities (RQ)

None of the components are on this list.

CERCLA/SARA Section 313

None of the components are on this list.

OSHA - Highly Hazardous

None of the components are on this list.

US State

State Right to Know

California Regulations

European/International Regulations

Canadian DSL/NDSL

CAS# 7732-18-5 is listed on Canada's DSL List.
CAS# 333-20-0 is listed on Canada's DSL List.

Canada Ingredient Disclosure List

CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.
CAS# 6132-04-3 is not listed on Canada's Ingredient Disclosure List.
CAS# 333-20-0 is not listed on Canada's Ingredient Disclosure List.
CAS# 5968-11-6 is not listed on Canada's Ingredient Disclosure List.
CAS# 7758-99-8 is not listed on Canada's Ingredient Disclosure List.

Section 16 - Other Information

MSDS Creation Date: November 5, 2000
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