Infosafe No™	1CH1C	Issue Date :January 2017	RE-ISSUED by CHEMSUPP

Product Name : **BENEDICT'S SOLUTION**

Classified as hazardous

1. Identification

GHS Product Identifier BENEDICT'S SOLUTION

Company Name CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)

Address 38 - 50 Bedford Street GILLMAN
SA 5013 Australia

Telephone/Fax Number Tel: (08) 8440-2000

Emergency phone number CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

Recommended use of the chemical and restrictions on use The blue colour changes to a red, orange or yellow precipitate or suspension in the presence of a reducing sugar, such as glucose, and is therefore used in testing for such materials, especially for urinalysis in the treatment of diabetes.
This product is for education/research use only.

Other Names

Name	Product Code
BENEDICT'S SOLUTION Qualitative Reagent	BL022

Other Information

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture Eye Damage/Irritation: Category 2B
Hazardous to the Aquatic Environment - Long-Term Hazard: Category 1

Signal Word (s) WARNING

Hazard Statement (s) H319 Causes serious eye irritation.
H410 Very toxic to aquatic life with long lasting effects.

Pictogram (s) Exclamation mark, Environment

Precautionary statement – Prevention P264 Wash thoroughly after handling.
P280 Wear eye and face protection.
P273 Avoid release to the environment.

Precautionary statement – Response P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.

Precautionary statement – Disposal P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion	Hazard Symbol	Risk Phrase
Add water to make total of 100 %	7732-18-5	60-75 %		
Trisodium citrate dihydrate	6132-04-3	15-20 %		

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Ingredients	Name	CAS	Proportion	Hazard Symbol	Risk Phrase
	Sodium carbonate, anhydrous	497-19-8	10-15 %		
	Copper (II) sulfate pentahydrate	7758-99-8	0-5 %		

4. First-aid measures

Inhalation	Remove from exposure, rest and keep warm. If breathing has stopped, apply artificial respiration. Ensure airways are clear and have qualified person give oxygen through a face mask if breathing is difficult. If irritation develops and persists, seek immediate medical attention.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice if effects persist.
Skin	Wash affected area thoroughly with copious amounts of running water. Remove contaminated clothing and wash before reuse. In severe cases or if irritation persists, seek medical attention.
Eye contact	If contact with the eye(s) occurs, wash with copious amounts of water for approximately 15 minutes holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. Seek medical attention.
First Aid Facilities	Maintain eyewash fountain and safety shower in work area.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products	Highly toxic fumes of sulfur oxides, as well as oxides of copper, carbon monoxide, carbon dioxide and nitrous oxides.
Specific Methods	This product contains a substantial proportion of water therefore ther are no restrictions on the type of extinguishing media which may be used.
Precautions in connection with Fire	Wear SCBA and structural firefighter's uniform.

6. Accidental release measures

Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Clean-up Methods - Small Spillages	Absorb or contain liquid with sand, earth or spill control material. Shovel up using non sparking tools and place in a labelled, sealable container for subsequent safe disposal. Put leaking containers in a labelled drum or overdrum.

7. Handling and storage

Precautions for Safe Handling	Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Use with adequate ventilation. Wear appropriate protective equipment. Repeated or prolonged contact with this material should be avoided in order to lessen the possibility of skin disorders. Wash thoroughly after handling. Change contaminated clothing. As with all chemicals, wash hands thoroughly after handling. It is essential that all who come into contact with this material, maintain high standards of personal hygiene i.e. washing hands prior to eating, drinking, smoking or going to the toilet. Keep away from incompatibles such as acids. Keep container dry.Do not empty into drains.
Conditions for safe storage, including any incompatabilities	Store in tightly closed containers, in a cool, dry, well-ventilated area away from incompatible substances. Store away from incompatible materials such as strong oxidisers and acids. Store out of direct sunlight. Protect from moisture. Keep well closed when not in use. Avoid extreme heat.
Corrosiveness	Corrosive in presence of steel. Solutions of copper sulfate are strongly corrosive to iron, galvanized iron and finely powdered metals.
Storage Temperatures	Store at room temperature (15 to 25 °C recommended).
Unsuitable Materials	Steel, iron and galvanized iron.

8. Exposure controls/personal protection

Other Exposure Information	A time weighted average (TWA) has been established for Copper, dusts & mists (as Cu) (Safe Work Australia) of 1 mg/m³. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.
Appropriate engineering controls	In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.

Respiratory Protection	Usually not required. Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.
Eye Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Plastic or rubber gloves.
Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
Body Protection	Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Liquid
Appearance	Clear, blue liquid.
Odour	Odourless.
Melting Point	~0 °C
Boiling Point	110-120 °C.
Solubility in Water	Miscible (soluble) in all proportions.
Solubility in Organic Solvents	Very slightly soluble in methanol, diethyl ether.
Specific Gravity	1.145; 1.195.
pH	~10
Vapour Pressure	14 mm Hg
Vapour Density (Air=1)	0.7
Evaporation Rate	>1
Volatile Component	~72%
Flammability	Non combustible material.
Explosion Properties	Exposure to fire may cause containers to rupture/explode.

10. Stability and reactivity

Chemical Stability	Stable under normal conditions of use, storage and handling.
Conditions to Avoid	Excess heat and incompatible materials.
Incompatible Materials	Hydroxylamine, alkalis, phosphates, hydrazine, strong acids, sulfuric acid, finely powdered metals, active metals (potassium, sodium, magnesium and zinc), reducing agents, strong oxidizing agents.
Hazardous Decomposition Products	Highly toxic fumes of sulfur oxides, as well as oxides of copper, carbon monoxide, carbon dioxide, nitrous oxides, may emit fumes of cyanide.
Possibility of hazardous reactions	Highly reactive with acids. Reactive with reducing agents. Slightly reactive to reactive with oxidizing agents and alkalis.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Ingestion	May cause irritation and discomfort of the gastrointestinal system. Large doses may cause systemic Copper poisoning which may include headache, pain, nausea, diarrhoea, vomiting, bloody stools and

	vomit; systemic toxic effects to the kidney and liver and central nervous excitation followed by depression; 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 gastrointestinal tract, vomiting, diarrhea, circulatory collapse, and death.
Inhalation	May cause mild to severe irritation and possible tissue damage or local necrosis of the mucous membranes, nose, throat and respiratory tract, especially if the material vapour or mist are generated, characterized by coughing, choking, or shortness of breath. 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. Inhalation of high concentration may lead to headache, dizziness, nausea and vomiting.
Skin	May cause slight to severe irritation, necrosis, burns, redness, pain and possible itching. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May produce eczematoid contact dermatitis.
Eye	May cause severe irritation, possible tissue damage particularly on mucous membranes of eyes and possible eye burns, resulting in redness, lacrimation, pain, stinging, conjunctivitis, oedema of the eyelids, and ulceration and turbidity of cornea. May result in corneal injury.
Carcinogenicity	No evidence of carcinogenic properties.
Reproductive Toxicity	Experimental reproductive effects have been reported for copper sulfate.
Chronic Effects	Repeated or prolonged exposure to the substance can produce damage to kidneys, lungs, the nervous system, mucous membranes. 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 jaundice and liver enlargement (Copper sulfate pentahydrate). Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Prolonged or repeated contact with this material may cause allergic reactions or hypersensitivity in susceptible individuals resulting in skin irritation or sensitization dermatitis.
Mutagenicity	Mutation data has been reported for copper sulfate. DNA inhibition system-human: lymphocyte 76 mmol/l (Copper(II) sulfate pentahydrate).

12. Ecological information

Ecological Information	No ecological problems are to be expected when the product is handled and used with due care and attention.
Ecotoxicity	The following applies to copper compounds: toxic for aquatic organisms.
Known Harmful Effects on the Environment	Severe marine pollutant. Contain spillage.
Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	The following applies to copper compounds: copper ions toxic for fish at concentrations below 1 mg/l. C. auratus toxic from 0.01 mg/l.
Acute Toxicity - Algae	The following applies to copper compounds: copper ions toxic for algae at concentrations below 1 mg/l.
Acute Toxicity - Bacteria	The following applies to copper compounds: copper ions toxic for bacteria at concentrations below 1 mg/l.
Acute Toxicity - Other Organisms	The following applies to copper compounds: copper ions toxic for protozoa at concentrations below 1 mg/l. mussels: 0.55 mg/l lethal in 12 h; oysters: 0.1 mg/l toxic.

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information	Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. Regulatory information

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Poisons Schedule Not Scheduled

16. Other Information

Literature References

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Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997.
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Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.
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Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.
Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.

Contact Person/Point

Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT:
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