Infosafe No™ 1CHCC Issue Date :February 2022 RE-ISSUED by CHEMSUPP

Product Name **COBALT (II) SULFATE Heptahydrate**

Classified as hazardous

Section 1 - Identification

Product Identifier COBALT (II) SULFATE Heptahydrate

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Recommended use of the chemical and restrictions on use Ceramics, pigments, glazes, in plating baths for cobalt, agricultural industry, animal feed additive, additive to soils, catalyst, paint and ink drier, storage batteries, analytical reagent and laboratory reagent.

Other Names

Name	Product Code
COBALT (II) SULFATE Heptahydrate AR	CA085
COBALT (II) SULFATE Heptahydrate LR	CL085
Cobalt sulfate, Cobaltous sulfate, Bieberite	
COBALT(II) SULFATE Monohydrate	CT649

Other Information

ChemSupply Australia 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 ChemSupply Australia 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 ChemSupply Australia 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.

Section 2 - Hazard(s) Identification

GHS Classification of the Substance/Mixture
Hazardous to the Aquatic Environment - Acute Hazard: Category 1
Hazardous to the Aquatic Environment - Long-Term Hazard: Category 1
Carcinogenicity: Category 1
Acute Toxicity - Oral: Category 4
Sensitization - Skin: Category 1
Toxic to Reproduction: Category 1
Sensitization - Respiratory: Category 1
Germ Cell Mutagenicity: Category 2

Signal Word DANGER

Hazard Statement (s)
H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H360 May damage fertility or the unborn child.
H410 Very toxic to aquatic life with long lasting effects.

Pictogram (s) Health hazard, Exclamation mark, Environment

Precautionary Statement – Prevention	P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P264 Wash thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P272 Contaminated work clothing should not be allowed out of the workplace. P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection. P284 Wear respiratory protection.
Precautionary Statement – Response	P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330 Rinse mouth. P302+P352 IF ON SKIN: Wash with plenty of soap and water. P363 Wash contaminated clothing before reuse. P333+P313 If skin irritation or rash occurs: Get medical advice/attention. P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. P308+P313 IF exposed or concerned: Get medical advice/attention.
Precautionary Statement – Storage	P405 Store locked up.
Precautionary Statement – Disposal	P501 Dispose of contents/container to an approved waste disposal plant.

Section 3 - Composition and Information on Ingredients

Ingredients	Name	CAS	Proportion
	Cobalt (II) sulfate heptahydrate	10026-24-1	96-100 %

Section 4 - First Aid Measures

Inhalation	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Consult a physician.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.
Skin	Wash with plenty of soap and water. Remove contaminated clothing and wash before re-use. Seek medical attention.
Eye	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek medical attention.
First Aid Facilities	Maintain eyewash fountain and drench facilities in work area.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient.
Most important symptoms/effects, acute, delayed and aggravated medical conditions	Allergic reactions, diarrhoea. Symptoms of an acute cobalt intoxication: diarrhoea, loss of appetite, drop in body temperature, drop in blood pressure. Toxic effect on kidneys (proteinuria, anuria), heart and pancreas.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

Section 5 - Firefighting Measures

Hazards from Combustion Products	Toxic fumes of sulfur oxides (SO2, SO3, SOx) and cobalt oxides.
Specific Methods	Use extinguishing media most appropriate for the surrounding fire. No limitations to the type of extinguishing media. Small fire: Use dry chemical, CO2, water spray or foam.

	Large fire: Use water spray, fog or foam. If safe to do so, move undamaged containers from the fire area. Cool containers with flooding quantities of water until well after the fire is out.
Hazchem Code	2Z
Decomposition Temperature	At 41.5 °C the substance dehydrates from heptahydrate to hexahydrate, at 71 °C to monohydrate; above 600 °C decomposition occurs to cobalt oxide (CoS04), this decomposes to CoO at 900-950 °C. Oxides of sulphur will be generated on heating above 600 °C.
Precautions in connection with Fire	Wear SCBA and structural firefighter's uniform.
Other Information	Do NOT use halogenated type extinguishers as catalytic decomposition of the extinguishing medium may well occur with the production of toxic gases, including phosgene. Suppress gases/vapours/mist with a water spray jet. Prevent fire extinguishing water from contaminating surface water or ground water.

Section 6 - Accidental Release Measures

Personal Precautions	Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Clean-up Methods - Small Spillages	Sweep up (avoid generating dust) and using clean non-sparking tools transfer to a clean, suitable, clearly labelled container for disposal in accordance with local regulations.
Clean-up Methods - Large Spillages	Stop leak if safe to do so. Prevent entry into waterways, drains, confined areas. Prevent dust cloud. Use clean non-sparking tools to collect material and place it into loosely-covered plastic containers for later disposal.

Section 7 - Handling and Storage

Precautions for Safe Handling	Avoid ingestion and inhalation. Work under a fume hood. Do not breathe dust. Avoid contact with eyes, skin, or clothing. Avoid prolonged or repeated exposure. Minimize dust generation and accumulation. Keep container tightly closed. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Wear suitable protective clothing. Under no circumstances eat, drink or smoke while handling this material. Wash thoroughly after handling. Contaminated clothing should be removed and washed before re-use.
Conditions for safe storage, including any incompatibilities	Store in tightly closed containers, in a cool, dry, well-ventilated area away from incompatible substances. Separated from strong oxidants. Protect against physical damage, direct sunlight and moisture. Keep away from heat. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.
Storage Temperatures	Store at room temperature (15 to 25 °C recommended).

Section 8 - Exposure Controls and Personal Protection

Occupational Exposure Limit (OEL) Values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Cobalt (II) sulfate heptahydrate			0.05		Cobalt, metal dust & fume (as Co)

Other Exposure Information	A time weighted average (TWA) has been established for Cobalt, metal dust & fume (as Co) (Safe Work Australia) of 0.05 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. Note: Sensitiser. TWA - the Time-Weighted Average airborne concentration over an eight-hour

	working day, for a five-day working week over an entire working life. 'Sen' notice - sensitiser. The substance can cause a specific immune response in some people. An affected individual may subsequently react to minute levels of that substance.
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	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 and Face 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. Nitrile rubber gloves
Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
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.

Section 9 - Physical and Chemical Properties

Form	Solid
Appearance	Rose-coloured, monoclinic crystals (monohydrate). Pink to red monoclinic, pristmatic crystals (heptahydrate).
Odour	Odourless.
Melting Point	Loses water molecules at 41.5 °C, 71 °C and above 600 °C. CoS04 decomposes to CoO at 900-950 °C and melts at ~1800 °C.
Decomposition Temperature	At 41.5 °C the substance dehydrates from heptahydrate to hexahydrate, at 71 °C to monohydrate; above 600 °C decomposition occurs to cobalt oxide (CoS04), this decomposes to CoO at 900-950 °C. Oxides of sulphur will be generated on heating above 600 °C.
Solubility in Water	Soluble (362 g/1 at 20°C).
Solubility in Organic Solvents	Slightly soluble in methanol, ethanol (heptahydrate).
Specific Gravity	1.948
pH	~4 (100 g/1, H2O, 20 °C)
Vapour Pressure	Negligible.
Volatile Component	0 %vol @ 21 °C
Flammability	Non combustible material.
Molecular Weight	281.10
Other Information	REFRACTIVE INDEX: 1.483

Section 10 - Stability and Reactivity

Chemical Stability	Stable under ordinary conditions of use and storage. Releases one water of crystallisation when heated to 41.5 °C.
Conditions to Avoid	Dust generation, moisture and incompatible materials.
Incompatible Materials	Strong oxidizing agents, tert-butyl hydroperoxide.
Hazardous Decomposition Products	Toxic fumes of sulfur oxides (SO2, SO3, SOx) (possibly sulfuric acid) and cobalt oxides.
Hazardous Polymerization	Will not occur.

Section 11 - Toxicological Information

Acute Toxicity - Oral	LD50 (rat): 582 mg/kg (heptahydrate).
Ingestion	Toxic if swallowed. May cause gastrointestinal irritation with abdominal pain, nausea, vomiting, diarrhoea, flushing of the face and ears, mild hypotension, rash, and ringing in the ears. May have cumulative toxic action where elimination cannot keep pace with absorption. Large amounts depress erythrocyte production and may have adverse effects on the thyroid. Toxic effect on the kidneys, heart and pancreas. Symptoms of acute cobalt intoxication include lack of appetite, drop in blood pressure, agitation, spasms. A single case of poisoning, liver and kidney damage has been attributed to cobalt. There have also been reports of haemotologic, digestive and pulmonary changes in humans.
Inhalation	Harmful if inhaled. Inhalation of dust may cause irritation to nose, throat and the respiratory tract. Symptoms may include coughing, sore throat, laboured breathing, shortness of breath and nausea. Risk of airways sensitisation. Respiratory hypersensitivity, asthma may appear. Inhalation of dust may cause cancer (animal data). Inhalation of cobalt dust and fumes is associated with an increased incidence of lung disease.
Skin	Causes irritation to skin. Symptoms include redness, itching, and pain. May cause dermatitis. Risk of sensitisation, an allergic skin reaction, which becomes evident upon re-exposure to this material. May be harmful if absorbed through the skin.
Eye	Causes irritation, redness, and pain.
Skin Sensitisation	Sensitisation: Sensitisation test (guinea pig): Positive.
Carcinogenicity	Cobalt sulfate [10026-24-1] and other soluble cobalt(II) salts are evaluated in the IARC Monographs (Vol. 86; 2006) as Group 2B: Possibly carcinogenic to humans. Group 2B: The agent is possibly carcinogenic to humans. This category is used for agents for which there is limited evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals. It may also be used when there is inadequate evidence of carcinogenicity in humans but there is sufficient evidence of carcinogenicity in experimental animals. In some instances, an agent for which there is inadequate evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals together with supporting evidence from mechanistic and other relevant data may be placed in this group. An agent may be classified in this category solely on the basis of strong evidence from mechanistic and other relevant data.
Chronic Effects	Repeated oral administration may produce goiter and reduced thyroid activity. Prolonged or repeated skin exposure may cause dermatitis. Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation exposure may cause asthma. Repeated or prolonged exposure to the substance can produce damage to the respiratory tract, lungs, kidneys, heart and bone marrow, resulting in cardiomyopathy, pericardial effusion, polycardial effusion, polycythemia, cardiac failure, vomiting and convulsions. This substance is possibly carcinogenic to humans. Animal tests show that this substance possibly causes toxic effects upon human reproduction. Animal tests show that this substance possibly causes malformations in human babies. May damage fertility.

Section 12 - Ecological Information

Ecotoxicity	Highly toxic for aquatic organisms. May cause long-term adverse effects in the aquatic environment.
Persistence and Degradability	Methods for the determination of biodegradability are not applicable to inorganic substances.
Environmental Protection	Do not allow to enter waters, waste water, or soil!

Section 13 - Disposal Considerations

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

Section 14 - Transport Information

Transport Information	Class 9 Miscellaneous dangerous goods shall not be loaded in a vehicle with: - Class 1 Explosives - Class 5. 1 Oxidizing agents (when Class 9 substance capable of igniting and burning - Class 5. 2 Organic peroxides (when Cl. 9 capable of igniting/burnin Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to this Code when transported by road or rail in; (a) packagings that do not incorporate a receptacle exceeding 500 kg(L); or (b) IBCs.
ADG UN Number	3077
ADG Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. - (Cobalt (II) Sulfate Heptahydrate)
ADG Transport Hazard Class	9
ADG Packing Group	III
Hazchem Code	2Z
EPG Number	9C1
IERG Number	47
Environmental Hazards	Highly toxic to aquatic organisms. May cause long term adverse effects in the aquatic environment.

Section 15 - Regulatory Information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS).
Poisons Schedule	Not Scheduled

Section 16 - Any Other Relevant Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'. Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals'. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand. Safe Work Australia, 'Hazardous Chemical Information System'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change

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Empirical Formula & Structural Formula

$CoSO_4.7H_2O$

...End Of MSDS...