Conforms to ANSI Z400.1-2004 Standard (United States, Canada).

Material Safety Data Sheet

Copper Sulphate Acidified

1 . Product and company identification

Common name : **Copper Sulphate Acidified**

Material uses : Feed Ingredient.

Supplier/Manufacturer : Pestell Minerals & Ingredients
141 Hamilton Road
New Hamburg, Ontario
Canada, N3A 2H1
Tel : (519) 662-2877
Fax : (519) 662-6242
E-mail: pestellgroup@pestell.com

In case of emergency : CANUTEC (613) 996-6666

MSDS authored by: : Kemika XXI Inc. + 1-450-435-7475 10/15/09

2 . Hazards identification

Physical state : Solid. (Crystals.)

Odor : Odorless.

Color : Blue.

Hazard status : This material is classified hazardous under OSHA regulations in the United States and the WHMIS Controlled Product Regulation in Canada.

Emergency overview : WARNING !

HARMFUL IF SWALLOWED.
CAUSES SEVERE EYE IRRITATION.
CAUSES RESPIRATORY TRACT AND SKIN IRRITATION.

Do not ingest. Avoid contact with skin and clothing. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes : Severely irritating to eyes.

Skin : Irritating to skin.

Inhalation : Irritating to respiratory system.

Ingestion : Harmful if swallowed.

Potential chronic health effects : Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
Mutagenic effects: Not available.
Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated exposure of the eyes to a low level of dust can produce eye irritation.

See toxicological information (section 11)

3 . Composition/information on ingredients

United States

Name	CAS number	%
Copper (II) sulphate pentahydrate	7758-99-8	60 - 100
Citric Acid	77-92-9	10 - 30

Canada

Name	CAS number	%
Copper (II) sulphate pentahydrate	7758-99-8	60 - 100
Citric Acid	77-92-9	10 - 30

4 . First aid measures

Eye contact : Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention.

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.

Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.

Notes to physician : No specific antidote. Medical staff must contact Poison Control Center.

5 . Fire-fighting measures

Flammability of the product : May be combustible at high temperature.

Products of combustion : These products are carbon oxides, sulfur oxides. Some metallic oxides.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : No specific hazard.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

Environmental precautions : Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : If emergency personnel are unavailable, vacuum or carefully scoop up spilled material and place in an appropriate container for disposal by incineration. Avoid creating dusty conditions and prevent wind dispersal.

7 . Handling and storage

Handling : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area.

8 . Exposure controls/personal protection

United States

Product name	Exposure limits
Copper (II) sulphate pentahydrate	**ACGIH TLV (United States).** TWA: 1 mg/m^3 8 hour(s). Form: Dusts and mists **OSHA PEL (United States).** TWA: 1 mg/m^3 8 hour(s). Form: Dusts and mists

Canada

Product name	Exposure limits
Copper (II) sulphate pentahydrate	**ACGIH TLV (Canada).** TWA: 1 mg/m^3 8 hour(s). Form: Dusts and mists

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : Safety glasses.

Skin : Lab coat.

Respiratory : A respirator is not needed under normal and intended conditions of use.

Hands : Natural rubber (latex).

HMIS Code/Personal protective equipment : B

Personal protection in case of a large spill : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Boots. Wear NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

Hygiene measures : Wash hands, forearms and face thoroughly after handling compounds and before eating, smoking and using the lavatory and at the end of the day. Follow good industrial hygiene practice.

9 . Physical and chemical properties

Physical state : Solid. (Crystals.)

Auto-ignition temperature : The lowest known value is 1009.85°C (1849.7°F) (Citric Acid).

Color : Blue.

Odor : Odorless.

pH : Acidic.

Melting/freezing point : 152.85°C (307.1°F) based on data for: Citric Acid.

Relative density : Weighted average: 2.15 (Water = 1)

Solubility : Partially soluble in cold water, hot water.

10 . Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Reactive with oxidizing materials and alkalis.

Hazardous polymerization : Will not occur.

Conditions of reactivity : Not available.

11 . Toxicological information

Toxicity data

Product/ingredient name	Test	Result	Route	Species
Copper (II) sulphate pentahydrate	LD50	300 mg/kg	Oral	Rat
	LD50	>5050 mg/kg	Dermal	Rabbit
Citric Acid	LD50	5040 mg/kg	Oral	Mouse

Acute Effects

Eyes : Severely irritating to eyes.

Skin : Irritating to skin.

Inhalation : Irritating to respiratory system.

Ingestion : Harmful if swallowed.

Potential chronic health effects : Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
Mutagenic effects: Not available.
Teratogenic effects: Not available.

12 . Ecological information

Ecotoxicity data

Product/ingredient name	Species	Period	Result
Copper (II) sulphate pentahydrate	Daphnia magna (EC50)	48 hour(s)	0.18 mg/l
	Oncorhynchus mykiss (LC50)	96 hour(s)	0.032 mg/l
	Oncorhynchus mykiss (LC50)	96 hour(s)	0.13 mg/l
	Lepomis macrochirus (LC50)	96 hour(s)	0.892 mg/l
	Oncorhynchus mykiss (LC50)	96 hour(s)	1.2 mg/l
	Lepomis macrochirus (LC50)	96 hour(s)	1.3 mg/l

Environmental precautions : Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Products of degradation : These products are carbon oxides and water, sulfur oxides. Some metallic oxides.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements.

14 . Transport information

AERG : 171

Regulatory information	Proper shipping name	Class	UN number	PG	Label
UN / IMDG / IATA Classification	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper (II) sulphate pentahydrate)	9	UN3077	III	
DOT Classification	RQ, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper (II) sulphate pentahydrate). Marine pollutant (Copper (II) sulphate pentahydrate)	9	UN3077	III	

TDG Classification	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper (II) sulphate pentahydrate)	9	UN3077	III	

Additional information	UN	IMDG	IATA	DOT	TDG
	-	-	-	**Marine pollutant** Severe marine pollutant (PP) **Remarks** This product is regulated according to those regulations as per RQ 10 lbs (4.54 kg).	**Remarks** Not regulated by road or by rail, regulated for marine transport only. See TDG 2.43(b)(ii)

15 . Regulatory information

United States

HCS Classification : Toxic material
Irritating material

U.S. Federal regulations : TSCA : All components listed.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Copper (II) sulfate pentahydrate; Citric Acid
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Copper (II) sulfate pentahydrate: Immediate (acute) health hazard, Delayed (chronic) health hazard; Citric Acid: Immediate (acute) health hazard

Clean Water Act (CWA) 307: Copper (II) sulfate pentahydrate

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

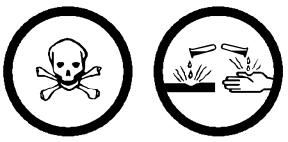
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

State regulations : Pennsylvania RTK: Copper (II) sulfate pentahydrate: (environmental hazard, generic environmental hazard)
New Jersey: Copper (II) sulfate pentahydrate

California prop. 65: No products were found.

Canada

WHMIS (Canada) : Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class E: Corrosive material



DSL : All components listed.

This product has been classified in accordance with the hazard criteria of the Canadian CPR and the United States OSHA. This MSDS contains all the information required by the CPR and OSHA, the American National Standard Institute (ANSI) Z400.1.

International lists : This product, (and its ingredients) is (are) listed on national inventories, or is (are) exempted from being listed, in Australia (AICS), in Europe (EINECS/ELINCS), in Korea (TCCL), in Japan (METI), in the Philippines (RA6969).

16 . Other information

Label requirements (U.S.A.) : HARMFUL IF SWALLOWED.
CAUSES SEVERE EYE IRRITATION.
CAUSES RESPIRATORY TRACT AND SKIN IRRITATION.

Hazardous Material Information System (U.S.A.) :

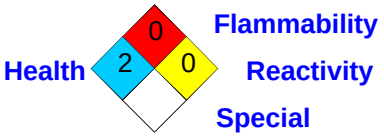
HMIS RATING

Health	2
Fire hazard	0
Physical Hazard	0
Personal protection	B

HAZARD RATINGS

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal
See section 8 for more detailed information on personal protection.

National Fire Protection Association (U.S.A.) :



References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005.

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