

SIGMA CHEMICAL COMPANY -- 20920-1 COPPER (II) SULFATE HYDRATE 98%

MSDS Safety Information

FSC: 6550
MSDS Date: 07/31/1994
MSDS Num: BWXLB
LIIN: 00F039683
Product ID: 20920-1 COPPER (II) SULFATE HYDRATE 98%
MFN: 01
Responsible Party
Cage: 21076
Name: SIGMA CHEMICAL COMPANY
Address: 3050 SPRUCE ST
Box: 14508
City: SAINT LOUIS MO 63178-5000
Info Phone Number: 314-771-5765/800-325-3010
Emergency Phone Number: 314-771-5765/800-325-3010
Review Ind: Y
Published: Y

Preparer Co. when other than Responsible Party Co.

Cage: 21076
Name: SIGMA CHEMICAL COMPANY
Box: 14508
City: ST LOUIS MO 63178

Contractor Summary

Cage: 60928
Name: ALDRICH CHEMICAL CO., INC.
Address: 1001 WEST ST PAUL
Box: 355
City: MILWAUKEE WI 53233
Phone: 414-273-3850
Cage: 63181
Name: FLUKA CHEMICAL CORP
Address: 1001 WEST ST PAUL
City: MILWAUKEE WI 53233
Phone: 414-273-3850
Cage: 21076
Name: SIGMA CHEMICAL COMPANY
Box: 14508
City: ST LOUIS MO 63178
Phone: 1-314-771-5765

Ingredients

Cas: 7758-99-8
RTECS #: GL8900000
Name: COPPER SULFATE, CUPRIC SULFATE PENTAHYDRATE
% Wt: 98
ACGIH TLV: 1 MG/CUM (CU)

Health Hazards Data

LD50 LC50 Mixture: ORAL LD50 (RAT): 300 MG/KG
Route Of Entry Inds - Inhalation: YES
Skin: YES
Ingestion: YES
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: HARMFUL IF INGESTED/INHALED/ABSORBED THROUGH SKIN. CAUSES IRRITATION TO MUCOUS MEMBRANES & UPPER RESPIRATORY TRACT. SKIN: IRRITATION. EYES: SEVERE IRRITATION/DAMAGE. COPPER POISONING: HEPATIC

CIRRHOSIS/BRAIN DAMAGE & DEMYELINATION/KIDNEY DE FECTS, COPPER DEPOSITS IN CORNEA/HEMOLYTIC ANEMIA/ACCELERATES ARTERIOSCLEROSIS.

Explanation Of Carcinogenicity: NONE

Signs And Symptions Of Overexposure: HARMFUL IF INHALED/INGESTED/ABSORBED THROUGH SKIN. CAUSES IRRITATION TO MUCOUS MEMBRANES & UPPER RESPIRATORY TRACT. SKIN: IRRITATION. EYES: SEVERE IRRITATION/DAMAGE. COPPER POISONING: HEPATIC CIRRHOSIS/BRAIN DAMAGE & DEMYELINATION/KIDNEY DE FECTS/COPPER DEPOSITS IN CORNEA/HEMOLYTIC ANEMIA/ACCELERATE ARTERIOSCLEROSIS.

First Aid: SKIN: IMMEDIATELY WASH W/SOAP & COPIOUS AMOUNTS OF WATER. EYES: IMMEDIATELY FLUSH W/COPIOUS AMOUNTS OF WATER FOR 15 MINS. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED. INGESTION: WASH MOUTH OUT W/WATER IF CONSCIOUS. OBTAIN MEDICAL ATTENTION IN ALL CASES.

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Handling and Disposal
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Spill Release Procedures: WEAR RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS & HEAVY RUBBER GLOVES. SWEEP UP, PLACE IN A BAG & HOLD FOR WASTE DISPOSAL. AVOID RAISING DUST. VENTILATE AREA & WASH SITE AFTER MATERIAL PICKUP IS COMPLETE.

Neutralizing Agent: SODIUM HYPOCHLORITE.

Waste Disposal Methods: DISSOLVE MATERIAL IN WATER/ACID SOLUTION/OXIDIZED TO A WATER SOLUBLE STATE. PRECIPITATE MATERIAL AS SULFIDE, ADJUSTING PH OF SOLUTION TO 7 TO COMPLETE PRECIPITATION. FILTER INSOLUBLES & DISPOSE OF THEM IN A HAZARDOUS-WASTE SITE. (SEE SUPP)

Handling And Storage Precautions: PROTECT FROM AIR. KEEP TIGHTLY CLOSED. TOXIC, EFFLORESCENT.

Other Precautions: DON'T BREATHE DUST, GET IN EYES/ON SKIN/CLOTHING. AVOID PROLONGED/REPEATED EXPOSURE.

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Fire and Explosion Hazard Information
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Flash Point Text: NONCOMBUSTIBLE

Extinguishing Media: USE MEDIA APPROPRIATE TO SURROUNDING FIRE CONDITIONS.

Fire Fighting Procedures: WEAR SELF CONTAINED BREATHING APPARATUS & PROTECTIVE CLOTHING.

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Control Measures
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Respiratory Protection: WEAR A NIOSH/MSHA APPROVED RESPIRATOR IN NONVENTILATED AREAS &/FOR EXPOSURE >ACGIH TLV.

Ventilation: USE ONLY IN A CHEMICAL FUME HOOD.

Protective Gloves: CHEMICAL RESISTANT

Eye Protection: CHEMICAL SAFETY GOGGLES

Other Protective Equipment: SAFETY SHOWER & EYE BATH

Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING & SHOES BEFORE REUSE. WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health: WASTE DISPOSAL CONT'D: DESTROY ANY EXCESS SULFIDE W/SODIUM HYPOCHLORITE. NEUTRALIZE SOLUTION BEFORE FLUSHING DOWN DRAIN IAW/FEDERAL, STATE & LOCAL REGULATIONS. PRODUCT IS A POSSIBLE MUTAGEN.

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Physical/Chemical Properties
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Vapor Pres: 7.3

Appearance and Odor: BLUE/WHITE CRYSTALS

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Reactivity Data
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Stability Indicator: YES

Stability Condition To Avoid: AIR & HEAT.

Materials To Avoid: FINELY POWDERED METALS, STEEL.

Hazardous Decomposition Products: SULFUR OXIDES.

Hazardous Polymerization Indicator: NO

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Toxicological Information
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Ecological Information
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MSDS Transport Information

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Regulatory Information

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Other Information

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HAZCOM Label

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Product ID: 20920-1 COPPER (II) SULFATE HYDRATE 98%
Cage: 21076
Company Name: SIGMA CHEMICAL COMPANY
PO Box: 14508
City: ST LOUIS MO
Zipcode: 63178
Health Emergency Phone: 314-771-5765/800-325-3010
Label Required IND: Y
Date Of Label Review: 12/16/1998
Status Code: C
Label Date: 12/16/1998
Origination Code: G

Hazard And Precautions: HARMFUL IF INGESTED/INHALED/ABSORBED THROUGH SKIN.
CAUSES IRRITATION TO MUCOUS MEMBRANES & UPPER RESPIRATORY TRACT. SKIN:
IRRITATION. EYES: SEVERE IRRITATION/DAMAGE. COPPER POISONING: HEPATIC
CIRRHOISIS/BRAIN DAMAGE & DEMYELINATION/KIDNEY DEFECTS, COPPER DEPOSITS
IN CORNEA/HEMOLYTIC ANEMIA/ACCELERATES ARTERIOSCLEROSIS. HARMFUL IF
INHALED/INGESTED/ABSORBED THROUGH SKIN. CAUSES IRRITATION TO MUCOUS MEMBRANES
& UPPER RESPIRATORY TRACT. SKIN: IRRITATION. EYES: SEVERE IRRITATION/DA
MAGE. COPPER POISONING: HEPATIC CIRRHOISIS/BRAIN DAMAGE &
DEMYELINATION/KIDNEY DEFECTS/COPPER DEPOSITS IN CORNEA/HEMOLYTIC
ANEMIA/ACCELERATE ARTERIOSCLEROSIS.

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of Defense or other government situation.

MSDS **Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

SUCCINIC ACID

MSDS Number: S7226 --- *Effective Date: 05/01/00*

1. Product Identification

Synonyms: Butanedioic acid; amber acid
CAS No.: 110-15-6
Molecular Weight: 118.10
Chemical Formula: HOOCCH₂CH₂COOH
Product Codes:
J.T. Baker: 0346
Mallinckrodt: 2860

Ingredient	CAS No	Percent	Hazardous
Succinic Acid	110-15-6	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. EYE IRRITATION MAY BE SEVERE.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

Ingestion:

Large oral doses may cause irritation to the gastrointestinal tract.

Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

Eye Contact:

Causes irritation, redness, and pain. Irritation may be severe.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Store in a tightly closed container. Protect container from physical damage. Store in a cool, dry, ventilated area away from sources of heat or ignition. Isolate from oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids);

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to the dust or mist is apparent, a half-face dust/mist respirator may be worn. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White crystals.

Odor:

Odorless.

Solubility:

100 g/100 ml water @ 100C (212F). 1g/13mL cold water.

Specific Gravity:

1.57 @ 25C/4C

pH:

2.7 (0.1 molar solution)

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

235C (455F)

Melting Point:

188C (370F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

May produce acrid smoke and irritating fumes when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Oxidizers and bases.

Conditions to Avoid:

Incompatibles.

11. Toxicological Information

Oral rat LD50: 2260 mg/kg; Irritation eye rabbit, standard Draize, 750 ug (severe); Investigated as a mutagen.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Succinic Acid (110-15-6)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Succinic Acid (110-15-6)                       Yes  Yes  Yes    Yes
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-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--
                                     DSL   NDSL   Phil.
-----
Succinic Acid (110-15-6)                       Yes   Yes   No     Yes
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-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
                                     RQ   TPQ   List  Chemical Catg.
-----
Succinic Acid (110-15-6)                       No    No    No     No
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-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
                                     261.33  8 (d)
-----
Succinic Acid (110-15-6)                       No      No      No
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Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **2** Flammability: **1** Reactivity: **0**

Label Hazard Warning:

WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. EYE IRRITATION MAY BE SEVERE.

Label Precautions:

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes.

Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 3, 9, 15, 16.

Disclaimer:

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Prepared by: Strategic Services Division

Phone Number: (314) 539-1600 (U.S.A.)

MSDS **Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

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UREA

MSDS Number: U4725 --- *Effective Date: 11/02/01*

1. Product Identification

Synonyms:

CAS No.: 57-13-6

Molecular Weight: 60.06

Chemical Formula: (NH₂)₂CO

Product Codes: J.T. Baker: 4111, 4203, 4204, 4206, 4208, 5594, 5607

Mallinckrodt: 3192, 7729, 7816, 8642, 8644, 8647, 8648

Ingredient	CAS No	Percent	Hazardous
Urea	57-13-6	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

SKIN, EYES AND RESPIRATORY TRACT.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 0 - None

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. May be absorbed into the bloodstream with symptoms similar to ingestion.

Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. May also cause headache, confusion and electrolyte depletion.

Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

Eye Contact:

Causes irritation, redness, and pain.

Chronic Exposure:

A study of 67 workers in an environment with high airborne concentrations of urea found a high incidence of protein metabolism disturbances, moderate emphysema, and chronic weight loss.

Aggravation of Pre-existing Conditions:

Supersensitive individuals with skin or eye problems, kidney impairment or asthmatic condition should have physician's approval before exposure to urea dust.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if symptoms occur.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard.

Explosion:

Reactions with incompatibles may pose an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. 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.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

For Urea:

-AIHA Workplace Environmental Exposure Limit (WEEL):

10 mg/m³, 8-hour TWA

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If heat is involved, an ammonia/methylamine, dust/mist cartridge may be necessary.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White crystals or white powder.

Odor:

Develops odor of ammonia.

Solubility:

Very soluble in water.

Specific Gravity:

1.32 @ 20C/4C

pH:

7.2 (10% in water)

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Decomposes.

Melting Point:

132 - 135C (270 - 275F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Urea decomposes upon heating and can form products including ammonia, oxides of nitrogen, cyanuric acid, cyanic acid, biuret, carbon dioxide.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Urea reacts with calcium hypochlorite or sodium hypochlorite to form the explosive nitrogen trichloride. It is incompatible with sodium nitrite, gallium perchlorate, strong oxidizing agents (permanganate, dichromate, nitrate, chlorine), phosphorus pentachloride, nitrosyl perchlorate, titanium tetrachloride and chromyl chloride.

Conditions to Avoid:

Incompatibles.

11. Toxicological Information

Urea: Oral rat LD50: 8471 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Urea (57-13-6)	No	No	None

12. Ecological Information

Environmental Fate:

When released to soil, this material will hydrolyze into ammonium in a matter of days to several weeks. When released into the soil, this material may leach into groundwater. When released into water, this material may biodegrade to a moderate extent. When released into water, this material is not expected to evaporate significantly. This material has an experimentally-determined bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Urea (57-13-6)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Urea (57-13-6)	Yes	Yes	No	Yes
-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Urea (57-13-6)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient	CERCLA	-RCRA-		-TSCA-
		261.33	8 (d)	
Urea (57-13-6)	No	No	No	

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: No information found.

Poison Schedule: No information found.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **1** Flammability: **0** Reactivity: **0**

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

Label Precautions:

Avoid breathing dust.

Keep container closed.

Avoid contact with eyes, skin and clothing.

Use only with adequate ventilation.

Wash thoroughly after handling.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

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Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

ASCORBIC ACID

MSDS Number: A7608 --- *Effective Date: 11/02/01*

1. Product Identification

Synonyms: L-ascorbic acid; vitamin C; L-3-Ketothreohexuronic acid lactone

CAS No.: 50-81-7

Molecular Weight: 176.13

Chemical Formula: C₆H₈O₆

Product Codes: J.T. Baker: 0936, 0937, 0938, B581

Mallinckrodt: 1852, 4407, 8829

Ingredient	CAS No	Percent	Hazardous
L-Ascorbic Acid	50-81-7	100%	Yes

3. Hazards Identification

Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight
Flammability Rating: 1 - Slight
Reactivity Rating: 0 - None
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Orange (General Storage)

Potential Health Effects

Ascorbic acid is relatively non-hazardous in routine industrial situations. It is not expected to

Inhalation:

May cause mild irritation to the respiratory tract.

Ingestion:

Large oral doses may cause gastrointestinal disturbances.

Skin Contact:

May cause mild irritation.

Eye Contact:

May cause mild irritation.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

See Health Hazards General.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if irritation persists.

Ingestion:

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:

As with most organic solids, fire is possible at elevated temperatures or by contact with an

ignition source.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from incompatible substances. 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.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

- OSHA Permissible Exposure Limit (PEL):

15 mg/m³ total dust, 5 mg/m³ respirable fraction for nuisance dusts.

- ACGIH Threshold Limit Value (TLV):

10 mg/m³ total dust containing no asbestos and < 1% crystalline silica for Particulates Not Otherwise Classified (PNOC).

Ventilation System:

In general, dilution ventilation is a satisfactory health hazard control for this substance.

However, if conditions of use create discomfort to the worker, a local exhaust system should be considered.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece

positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White crystals.

Odor:

Odorless.

Solubility:

33g/100g water.

Density:

1.65

pH:

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Not applicable.

Melting Point:

192C (378F) Slightly decomposes.

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Aqueous solutions are rapidly oxidized by air.

Hazardous Decomposition Products:

May produce acrid smoke and irritating fumes when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers and alkali hydroxides, alkalis, iron, copper, sodium salicylate, sodium nitrite, theobromine and methenamine.

Conditions to Avoid:

No information found.

11. Toxicological Information

Oral (rat) LD50 11,900 mg/kg . Investigated as a tumorigen, mutagen, and reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
L-Ascorbic Acid (50-81-7)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
L-Ascorbic Acid (50-81-7)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
L-Ascorbic Acid (50-81-7)	Yes	Yes	No	Yes

```

-----\Federal, State & International Regulations - Part 1\-----
-SARA 302-   -SARA 313-
Ingredient   RQ   TPQ   List  Chemical Catg.
-----
L-Ascorbic Acid (50-81-7)   No   No   No   No
    
```

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-----\Federal, State & International Regulations - Part 2\-----
-RCRA-   -TSCA-
Ingredient   CERCLA   261.33   8 (d)
-----
L-Ascorbic Acid (50-81-7)   No   No   No
    
```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: No information found.

Poison Schedule: No information found.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **1** Flammability: **0** Reactivity: **0**

Label Hazard Warning:

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

Label Precautions:

None.

Label First Aid:

Not applicable.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular

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FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS

INFORMATION.

Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

MSDS **Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



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SODIUM SULFITE

MSDS Number: S5066 --- *Effective Date: 11/02/01*

1. Product Identification

Synonyms: Sodium sulfite anhydrous; disodium sulfite; sulfurous acid, disodium salt; exsiccated sodium sulfite

CAS No.: 7757-83-7

Molecular Weight: 126.04

Chemical Formula: Na₂SO₃

Product Codes: J.T. Baker: 3888, 3922

Mallinckrodt: 8049, 8056, 8064

Ingredient	CAS No	Percent	Hazardous
Sodium Sulfite	7757-83-7	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

BREATHING DIFFICULTIES. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight
Flammability Rating: 0 - None
Reactivity Rating: 1 - Slight
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Orange (General Storage)

Potential Health Effects

Although only moderately toxic in large amounts, sulfites can pose risk to some asthmatics producing central nervous system depression, bronchoconstriction and anaphylaxis.

Inhalation:

Inhalation of dust may cause irritation to the mucous membranes of the upper respiratory tract. Use of bronchodilators preserved with sulfites can cause allergic reactions.

Ingestion:

May cause gastric irritation by the liberation of sulfurous acid. Large doses may result in circulatory disturbances, diarrhea, and central nervous system depression. Estimated fatal dose is 10g to 0.5 - > 5g/kg.

Skin Contact:

May cause irritation.

Eye Contact:

May cause irritation, redness and pain.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

Some individuals are said to be dangerously sensitive to minute amounts of sulfites in foods and some bronchodilator medicines preserved with sulfites. Symptoms may include bronchoconstriction, shock, gastrointestinal disturbances, angio edema, flushing, and tingling sensations.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician immediately.

Skin Contact:

Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard. If involved in a fire, can emit toxic fumes and irritating and corrosive gases.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. 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.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-ACGIH Threshold Limit Value (TLV):

5mg/m³ (TWA) for sodium bisulfite & for sodium metabisulfite, A4 Not classifiable as a human carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece

positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White crystals.

Odor:

Odorless.

Solubility:

Soluble in ca. 3.2 parts water.

Specific Gravity:

2.6 @ 15.4C (60F)

pH:

ca. 9

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Not applicable.

Melting Point:

No information found.

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Heat and moisture contribute to instability. May air-oxidize.

Hazardous Decomposition Products:

Burning may produce sulfur oxides.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Acids, strong oxidizers, high temperatures.

Conditions to Avoid:

Heat and moisture.

11. Toxicological Information

Oral mouse LD50: 820 mg/kg. Investigated as a tumorigen and mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Sodium Sulfite (7757-83-7)	No	No	3

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Sodium Sulfite (7757-83-7)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Sodium Sulfite (7757-83-7)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.

Sodium Sulfite (7757-83-7)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient	CERCLA	-RCRA-	-TSCA-	
		261.33	8 (d)	

Sodium Sulfite (7757-83-7)	No	No	No	

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: No information found.

Poison Schedule: No information found.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **2** Flammability: **0** Reactivity: **0**

Label Hazard Warning:

BREATHING DIFFICULTIES. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

Label Precautions:

Avoid breathing dust.

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Keep container closed.

Use with adequate ventilation.

For Reagent and Technical Grades: Not For Food Use. For TAC Grades: Do not use in meats or in foods recognized as a source of Vitamin B-1, nor in fruits or vegetables to be served or sold raw to consumers or to be presented to consumers as fresh.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

HOME OIL COMPANY, INC -- SODA ASH NATURAL DENSE #05326

MSDS Safety Information

FSC: 6810
NIIN: 00-233-1715
MSDS Date: 10/01/1993
MSDS Num: CCJRS
Product ID: SODA ASH NATURAL DENSE #05326
MFN: 01
Responsible Party
Cage: 0A9L8
Name: HOME OIL COMPANY, INC
Address: 3511 N OHIO
Box: 2609
City: WICHITA KS 67201-2609
Info Phone Number: 316-838-4663
Emergency Phone Number: 800-633-8253 (PERS)
Preparer's Name: DENE TURNER
Review Ind: Y
Published: Y

Preparer Co. when other than Responsible Party Co.

Cage: 0A9L8
Name: HOC INDUSTRIES, INC
Address: 3511 N. OHIO
Box: 2609
City: WICHITA KS 67219

Contractor Summary

Cage: 0A9L8
Name: HOC INDUSTRIES, INC
Address: 3511 N. OHIO
Box: 2609
City: WICHITA KS 67219
Phone: 316-838-4663

Item Description Information

Item Manager: GSA
Item Name: SODIUM CARBONATE, ANHYDROUS, TECHNICAL
Unit of Issue: DR
Quantitative Expression: 00000000100LB
UI Container Qty: 0
Type of Container: METAL

Ingredients

Cas: 497-19-8
RTECS #: VZ4050000
Name: SODIUM CARBONATE SODA ASH (SARA 312)
% Wt: 100.0
Other REC Limits: NONE RECOMMENDED
OSHA PEL: 15 MG/M3/RESP 5MG/M3
ACGIH TLV: 10 MG/M3

Health Hazards Data

Route Of Entry Inds - Inhalation: YES
Skin: YES
Ingestion: YES
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: EYES: IRRIT, BURNS. SKIN: MAY CAUSE IRRITATION, BURNS.

INHALATION: MAY CAUSE IRRITATION. INGESTION: MAY CAUSE IRRITATION.
First Aid: EYE:IMMED FLUSHW/LOTS WATER >15 MIN HOLK LIDS OPEN. SKIN:IMMED
FLUSH W/LOTS WATER>15 MIN. REMOVE/WASH CONTAM CLOTHES/SHOES. CALL DR.
INHAL: MOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIF RESP (MOUTH-T O-MOUTH) .
IF TROUBLE BREATHING GIVE OXYGEN. CALL DR. INGESTION:DON'T INDUCE VOMITING.
RINSE MOUTH W/WATER. DILUTE W/WATER. IF VOMITING SPONTANEOUSLY KEEP HEAD
BELOW HIPS TO PREVENT ASPIRATION. CALL DR

=====
Handling and Disposal
=====

Spill Release Procedures: CONTAIN/DISPOSE OF IN ACCORDANCE W/FEDERAL, STATE,
LOCAL REGUALTIONS. SWEEP, SHOVEL, PICK UP, RETURN TO DRY/CLEAN CONTAINER.
Waste Disposal Methods: IF CAN'T REUSE/CHEMICALLY REPROCESS, DISPOSE IN
APPROVED FACILITY IN ACCORDANCE W/ANY APPLICABLE REGULATIONS UNDER RCRA.
DISPOSE IN ACCORDANCE W/ALL FEDERAL, STATE, LOCAL REGULATIONS. LOCAL REGS MAY
B E MORE STRINGENT THAN FEDERAL OR STATE.
Handling And Storage Precautions: WEAR PROTECTIVE EQUIPMENT. WASH THOROUGHLY
AFTER HANDLING. DON'T BREATHE DUST. DON'T GET IN EYES, ON SKIN OR CLOTHING.
DON'T SWALLOW.
Other Precautions: FOR INDUSTRIAL USE ONLY. CONTAINER HAZARDOUS WHEN EMPTY.
OBSERVE ALL LABEL HAZARD PRECAUTIONS. KEEP CONTAINER CLOSED WHEN NOT IN USE.
STORE IN A COOL DRY PLACE. KEEP AWAY FROM CHILDREN.

=====
Fire and Explosion Hazard Information
=====

Flash Point Text: NA
Lower Limits: NOT EST.
Upper Limits: NOT EST.
Extinguishing Media: APPROPRIATE FOR SURROUNDING FIRE.
Fire Fighting Procedures: PREVENT EXPO TO FIRE, FUMES, SMOKE, COMBUSTION PROD.
FIREFIGHTERS WEAR FULL FACE SCBA/IMPERVIOUS PROTECTIVE CLOTH. NOT CONSIDERED
FIRE HAZARD. EVACUATE AREA.
Unusual Fire/Explosion Hazard: DUST CAN BE AN EXPLOSION HAZARD. PREVENT
BUILD-UP OF DUST ON WALLS, FLOORS, EQUIPMENT.

=====
Control Measures
=====

Respiratory Protection: USE NIOSH/MSHA RESPIRATOR APPROVED FOR CONDITIONS OF
EXPOSURE. RESPIRATOR PROTECTION PROGRAMS MUST BE IN COMPLIANCE W/OSHA
REQUIREMENTS & 29 CFR 1910.134. FOR EMERGENCY, NIOSH/MSHA APPROVED
POSITIVE P RESSURE SCBA SHOULD BE AVAILABLE.
Ventilation: ADEQUATE TO MINIMIZE EXPOSURE TO MAINTAIN EXPOSURE LEVELS BELOW
TLV'S. LOCAL MECHANICAL MAY BE REQUIRED.
Protective Gloves: IMPERVIOUS
Eye Protection: CHEMICAL GOGGLES, NO CONTACTS.
Other Protective Equipment: COMPLETE BODY-COVERING, SAFETY HELMET. SAFETY
SHOWER, EYEWASH FOUNTAIN, WASHING FACILITIES SHOULD BE READILY AVAILABLE.

=====
Physical/Chemical Properties
=====

HCC: N1
B.P. Text: > OR =752F
M.P/F.P Text: 1564F,851C
Vapor Pres: NOT EST.
Vapor Density: NOT EST.
Spec Gravity: 2.5 @68F
PH: 11.4
Evaporation Rate & Reference: NOT EST.
Solubility in Water: 23%
Appearance and Odor: POWDER, CRYSTAL, FLAKE GRANUAL, SOLID/BRIQUETTE/TABLET,
ODOR NIL
Percent Volatiles by Volume: NE

=====
Reactivity Data
=====

Stability Indicator: YES
Materials To Avoid: INORGANIC ACIDS

Hazardous Decomposition Products: CARBON MONOXIDE, CARBON DIOXIDE
Hazardous Polymerization Indicator: NO

=====
Toxicological Information
=====

=====
Ecological Information
=====

=====
MSDS Transport Information
=====

=====
Regulatory Information
=====

=====
Other Information
=====

=====
Transportation Information
=====

Responsible Party Cage: 0A9L8
Trans ID NO: 58482
Product ID: SODA ASH NATURAL DENSE #05326
MSDS Prepared Date: 10/01/1993
Review Date: 09/25/1996
MFN: 1
Multiple KIT Number: 0
Review IND: Y
Unit Of Issue: DR
Container QTY: 0
Type Of Container: METAL

=====
Detail DOT Information
=====

DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
=====

=====
Detail IMO Information
=====

IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
=====

=====
Detail IATA Information
=====

IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
=====

=====
Detail AFI Information
=====

AFI PSN Code: ZZZ
AFI Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
=====

=====
HAZCOM Label
=====

Product ID: SODA ASH NATURAL DENSE #05326
Cage: 0A9L8
Company Name: HOC INDUSTRIES, INC
Street: 3511 N. OHIO
PO Box: 2609
City: WICHITA KS
Zipcode: 67219
Health Emergency Phone: 800-633-8253 (PERS)
Label Required IND: Y
Date Of Label Review: 10/12/1999
Status Code: A
Origination Code: G
Hazard And Precautions: EYES: IRRIT, BURNS. SKIN: MAY CAUSE IRRITATION, BURNS.

INHALATION: MAY CAUSE IRRITATION. INGESTION: MAY CAUSE IRRITATION.

=====
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MSDS **Material Safety Data Sheet**

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Phillipsburg, NJ 08865



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CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

POTASSIUM BROMIDE

MSDS Number: P5587 --- *Effective Date: 06/06/01*

1. Product Identification

Synonyms: Bromide salt of potassium

CAS No.: 7758-02-3

Molecular Weight: 119.00

Chemical Formula: KBr

Product Codes:

J.T. Baker: 2961, 2998

Mallinckrodt: 0500, 0505

Ingredient	CAS No	Percent	Hazardous
Potassium Bromide	7758-02-3	100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. AFFECTS CENTRAL NERVOUS SYSTEM, BRAIN AND EYES. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight
Flammability Rating: 0 - None
Reactivity Rating: 0 - None
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

Dust may cause irritation to the respiratory tract. Symptoms may include coughing, sore throat, and shortness of breath.

Ingestion:

May cause nausea, vomiting and abdominal pain. Ingestions are usually promptly rejected by vomiting, but sufficient absorption may occur to produce central nervous system, eye and brain effects. Symptoms may include skin rash, blurred vision and other eye effects, drowsiness, irritability, dizziness, mania, hallucinations, and coma.

Skin Contact:

Dry material may cause mild irritation. Solutions may cause irritation, redness, pain, and skin burns.

Eye Contact:

May cause irritation, redness and pain.

Chronic Exposure:

Repeated or prolonged exposure by any route may cause skin rashes (bromaderma). Repeated ingestion of small amounts may cause central nervous system depression, including depression, ataxia, psychoses, memory loss, irritability, and headache.

Aggravation of Pre-existing Conditions:

Persons suffering from debilitation, depression, alcoholism, neurological or psychological disorders may be more susceptible to the effects of this compound.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Eye Contact:

Wash eyes with plenty of water for at least 15 minutes. Call a physician.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from incompatibilities. 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.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White crystals.

Odor:

Odorless.

Solubility:

70g/100g water @ 25C (77F).

Specific Gravity:

2.75 @ 25C

pH:

Aqueous solution is neutral.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

1435C (2615F)

Melting Point:

730C (1346F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Oxides of the contained metal and halogen, possibly also free, or ionic halogen.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

For Potassium Bromide: Strong oxidizers, acids, and bromine trifluoride.

Conditions to Avoid:

Incompatibles.

11. Toxicological Information

Potassium bromide: oral rat LD50: 3070 mg/kg; investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
-----	-----	-----	-----

Reactivity: No (Pure / Solid)

Australian Hazchem Code: No information found.

Poison Schedule: No information found.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **2** Flammability: **0** Reactivity: **0**

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED OR INHALED. AFFECTS CENTRAL NERVOUS SYSTEM, BRAIN AND EYES. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

Label Precautions:

Avoid breathing dust.
Keep container closed.
Use with adequate ventilation.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 15.

Disclaimer:

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Prepared by: Environmental & Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

MSDS **Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

PYROCATECHOL

MSDS Number: P7896 --- *Effective Date: 09/14/00*

1. Product Identification

Synonyms: Catechol; 1,2-benzenediol; 1,2-dihydroxy benzene

CAS No.: 120-80-9

Molecular Weight: 110.11

Chemical Formula: C₆H₆O₂

Product Codes:

J.T. Baker: U672

Mallinckrodt: 1724

Ingredient	CAS No	Percent	Hazardous
Catechol	120-80-9	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

**AFFECTS EYES, SKIN, RESPIRATORY TRACT AND CENTRAL NERVOUS SYSTEM.
EXPOSURE MAY PRODUCE LIVER, KIDNEY, AND NEUROLOGICAL DISORDERS.
MAY CAUSE ALLERGIC SKIN REACTION.**

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Life)

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White (Corrosive)

Potential Health Effects

Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Breathing vapor or dust results in digestive disturbances (vomiting, difficulty in swallowing, diarrhea, loss of appetite). Systemic poisoning may occur with symptoms similar to those of ingestion.

Ingestion:

Poison. Symptoms may include burning pain in mouth and throat, abdominal pain, headache, dizziness, muscular weakness, irregular breathing, coma, and possibly death. May interfere with blood's capability to carry oxygen (methemoglobinemia), as evidenced by bluish color to skin and lips. With catechol exposure, convulsions are more marked than with phenol exposure, and blood dyscrasias (imbalance of components of the blood) have been noted.

Skin Contact:

Corrosive. May be absorbed through the skin with systemic poisoning effects to follow. Discoloration and severe burns may occur. May cause allergic skin reactions.

Eye Contact:

Corrosive. Redness, pain, blurred vision may occur. May cause severe damage and blindness.

Chronic Exposure:

Repeated exposure may cause symptoms described for acute poisoning as well as liver damage.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids

occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Flash point: 127.2C (261F) CC

Flammable limits in air % by volume:

lcl: 1.4

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Sealed containers may rupture when heated.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage. Store separately from reactive or combustible materials, and out of direct sunlight. Storage and use should be in No Smoking Areas. 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.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

- ACGIH Threshold Limit Value (TLV):

5 ppm (TWA) skin, A3 animal carcinogen.

- NIOSH Recommended Exposure Limits (RELs):

5 ppm (TWA) skin.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half-face respirator with an organic vapor cartridge and particulate filter (NIOSH type N95 or better filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and particulate filter (NIOSH N 100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P particulate filter. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Colorless crystals.

Odor:

Phenolic odor.

Solubility:

Soluble in 2-3 parts water.

Specific Gravity:

1.344

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

245C (473F)

Melting Point:

104 - 106C (219 - 223F)

Vapor Density (Air=1):

3.79

Vapor Pressure (mm Hg):

10 @ 118.3C (244F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Light sensitive. Discolors on exposure to air or light.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Acid chlorides, acid anhydrides, bases, oxidizing agents.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Oral rat LD50: 260 mg/kg; skin rabbit LD50: 800 mg/kg; Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Catechol (120-80-9)	No	No	2B

12. Ecological Information

Environmental Fate:

When released into the soil, this material may biodegrade to a moderate extent. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material may biodegrade to a moderate extent. When released into water, this material is not expected to evaporate significantly. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals.

Environmental Toxicity:

The LC50/96-hour values for fish are between 1 and 10 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: TOXIC SOLID, CORROSIVE, ORGANIC, N.O.S.

(PYROCATECHOL)

Hazard Class: 6.1, 8

UN/NA: UN2928

Packing Group: II

Information reported for product/size: 500G

International (Water, I.M.O.)

Proper Shipping Name: TOXIC SOLID, CORROSIVE, ORGANIC, N.O.S.

(PYROCATECHOL)

Hazard Class: 6.1, 8

UN/NA: UN2928

Packing Group: II

Information reported for product/size: 500G

15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Catechol (120-80-9)                          Yes   Yes   Yes    Yes
  
```

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-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL   NDSL   Phil.
-----
Catechol (120-80-9)                          Yes   Yes   No     Yes
  
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-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ   TPQ   List  Chemical Catg.
-----
Catechol (120-80-9)                          No    No    Yes    No
  
```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
                                           261.33  8 (d)
-----
Catechol (120-80-9)                          100    No     Yes
  
```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: No information found.

Poison Schedule: No information found.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **3** Flammability: **1** Reactivity: **0**

Label Hazard Warning:

DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CORROSIVE. CAUSES SEVERE BURNS TO EVERY AREA OF CONTACT. AFFECTS EYES, SKIN, RESPIRATORY TRACT AND CENTRAL NERVOUS SYSTEM. EXPOSURE MAY PRODUCE LIVER, KIDNEY, AND NEUROLOGICAL DISORDERS. MAY CAUSE ALLERGIC SKIN REACTION.

Label Precautions:

Do not breathe dust or vapor.

Do not get in eyes, on skin, or on clothing.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8, 11.

Disclaimer:

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