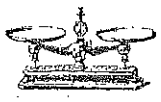
CATALOG NUMBER 04-3010 (To make 20 plates)
CATALOG NUMBER 04-3011 (To make 200 plates)



PHOTOGRAPHERS'
FORMULARY INC.

PO Box 950 • Condon MT 59826 • 406-754-2891 • FAX 406-754-2896
E-MAIL formulary @montana.com
www.photoformulary.com

JD-2 HOLOGRAPHY FILM DEVELOPER

Holographic film plates, supplies, and instructions for holography are available from:
Integraf LLC
Holography Supplies & Resources
(650) 351-5003
www.integraf.com
V2004-11

Optimized by Dr. Tung Jeong of Lake Forest College, the JD-2 holography developer and processing kit provides all the chemicals needed for making holograms using Slavich PFG-01, VRP, VRP-M holographic plates and film sheets. Simply mix the dry chemicals in the JD-2 kit with water to prepare the developer components and bleach solution. If you are using holographic film sheets, remove the film sheet from your film holder after exposure before processing. This formula has been proven to be most useful for all kinds of holograms. It is relatively safe, even for the home hobbyist.
Use a green safe light and shine it on the floor. Dim it so that you can barely see during the experiment.

FOR YOUR CHEMICAL SAFETY

Like many household cleaners, chemicals in general should be considered dangerous and must be treated with respect. Please read all the warning labels on each package. It is good practice to use eye goggles, dust mask, apron and rubber gloves when mixing chemicals. While the chemicals have low volatility, working in a ventilated area is recommended.

Although the EPA considers most chemicals in JD-2 non-hazardous, the kit does contain small amounts of chemicals that the EPA does consider hazardous.

Potassium Dichromate is both toxic and an oxidizer (potential fire hazard). To dispose of excess solid potassium dichromate always washes the solid down the drain with large amounts of water. Never dispose of the solid in a wastebasket. Spillage of a dichromate solution on the skin will cause a chemical burn, which will appear as ulceration. In addition, all chromium compounds are potential carcinogens. In addition, we strongly recommend you use disposable rubber gloves when handling this compound in solutions. Clean all trays and containers thoroughly with water followed by soap and water. Dispose of excess dichromate salts and their solutions down a drain with a large volume of water.

Urea and Ascorbic Acid may irritate the eyes and skin.

Catechol is a toxic central nervous system depressant, methemoglobin former and convulsant; a severe eye, skin, and mucous membrane irritant. It is also a skin sensitizer. Poisoning may affect the liver and kidneys.

Sodium Bisulfate is a skin irritant. Wash skin with lots of running water for 15 minutes. Get immediate medical attention. If swallowed do not induce vomiting. Wear rubber gloves; dust mask, apron, and safety goggles when mixing this solution.

If for any reason you do not wish to assume all risks in using these chemicals, please return them within 30 days for a full refund.
Please consult with local sewer and water authorities regarding the proper disposal of darkroom chemicals in your area.

MIXING THE STOCK SOLUTIONS

The chemicals in this JD-2 kit are used to prepare approximately 1000ml of each of three solutions. You will need to add de-ionized or distilled water, which can be purchased at your local grocery store. It is best to use distilled water that contains no other chemicals although distilled drinking water, which sometimes contains small but negligible amounts of other chemicals, can also be used. Water from your tap generally contains fluoride and other impurities that may reduce the quality of your hologram. For efficiency and safety, teachers or an adult should pre-mix the solutions for their students.

Part A

Chemical	Amount	Amount
	(Cat. no. 04-3010)	(Cat. no. 04-3011)
Catechol	20 grams	200 grams
Ascorbic Acid	10 grams	100 grams
Sodium Sulfite	10 grams	100 grams
Urea	75 grams	750 grams
ADD Distilled water	1000 ml	10 liters

Part B

Chemical	Amount	Amount
Sodium Carbonate, Anhyd.	60 grams	600grams
ADD Distilled water	1000ml	10 liters

Bleach Solution

Chemical	Amount	Amount
Potassium Dichromate	5 grams	50 grams
Sodium Bisulfate	80 grams	800 grams
Add Distilled water	1000ml	10 liters

Use three 1 liter (or larger) size clean glass or plastic bottles with leak-proof caps. Label them **Part A, Part B,** and **Bleach** respectively. To help dissolve the chemicals, you can heat the water until it is Luke warm. Optionally, you can also prepare each solution in a clean beaker and then pour the solution into the bottle.

PART A. Fill the bottle marked Part A with roughly 1000 ml of warm distilled water. Dissolve each chemical above for Part A one-by-one, in any order. Tightly cap the bottle.

PART B. Follow a similar procedure as above for Part B.

BLEACH. Follow a similar procedure as above for the Bleach.

All solutions last for many months if capped tightly and stored in room temperature. Refrigeration will further increase shelf life. Store chemicals it in a safe place away from food and children.

HOLOGRAM EXPOSURE

For detailed instructions on making holograms, study the article "Simple Holography" found on Integraf's website (www.integraf.com). Before making your exposures, you should mix and prepare your chemicals as follows.

PREPARATION

Have the following items on hand:

- Your pre-mixed JD-2 Part A, Part B, and Bleach Solution.
- 1 additional gallon (4 liters) of distilled or de-ionized water for best results. Tap water will also work but not as well. Avoid hard water. This will be used to rinse the holograms between each processing step.
- 2 small glass or plastic trays, just large enough so that the hologram you are making can be submerged in a horizontal position.
- 2 large glass or plastic trays to hold 1 liter of distilled water for rinsing. Tap water may also work but not as well.

- 1 (optional, but recommended) large tray to hold 1 liter of distilled water mixed with about 1 ml of photographic wetting agent such as PhotoFlo or Formaflo. You can also use a small tray with less wetting agent, but you should replace the solution after a few holograms.
- 1 rubber glove

Now label one small tray as Developer A&B. Then, mix equal portions of Part A and Part B, enough so that the hologram to be developed can be totally submerged. Once mixed, the combined A&B solution can be used to develop several holograms, and can last several hours.

- Next to the developer tray place a large tray with one liter of distilled water. This will be used as a rinse.
- Next, label another small tray as Bleach. Put enough bleach into it so that the hologram can be totally submerged.
- Next to the bleach place another large tray with one liter of distilled water. This will be used as a rinse.

Optionally, place a large tray with the wetting solution in 1 liter of distilled water. Using a wetting solution is optional but recommended. It allows the hologram to dry evenly, thus helping you prevent smudges or streaks.
Check the order of the trays: developer A&B, rinse, bleach, rinse, wetting solution.

PROCESSING PROCEDURES

After the holographic plate is exposed, hold it by the edges with your glove hand (or tongs). Keep the emulsion (sticky) side facing upwards to protect the emulsion from accidentally scraping the bottom of your developer tray. Complete the following steps in a dark room. You can use a green safelight. Alternatively you can use a standard night light without allowing any direct light to the holographic plate. (After the bleaching process, it is safe to turn on all lights, if preferred.)

1. Develop:

Quickly submerge the plate into the developer so that all parts get wet evenly. Slush it around for about two minutes. The hologram should turn black.

2. Rinse:

Rinse the developed hologram with agitation for about 20 seconds (or up to three minutes for best results).

3. Bleach:

Place the rinsed hologram into the bleaching solution; agitate it until the plate is completely clear (approximately two minutes or less).

4. Rinse again:

Rinse the bleached hologram with agitation for about 20 seconds (or up to three minutes for best results)

5. Finish in wetting solution:

Optionally, place the finished hologram in the wetting solution for about 20-60 seconds. For best results, avoid streaks or runs as you remove the hologram from the solution. You can actually do this step under light so you observe if the wetting solution is evenly coated. (After the bleaching process, the hologram is safe to process under regular indoor lighting).

A good way to dry the hologram is to stand it against a vertical surface with the bottom edge resting on a hand-towel or tissue paper. Best results are obtained when it dries naturally in clean, dust-free air. However, if time is limited, the hologram can be quick-dried by holding it vertically and blowing warm air across it with a hair dryer. For holographic film sheets, hang up vertically to dry, using clean and dry clothespins.

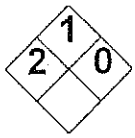
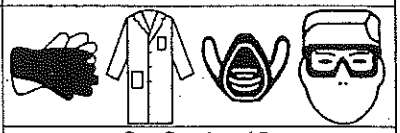
For a reflection hologram, the image can be viewed after thorough drying, which may take minutes to hours, depending on ambient conditions and technique. Transmission holograms, on the other hand, can be viewed with a laser even when wet.

10-0340

SPECTRUM®

Gardena, CA

Material Safety Data Sheet

NFPA	HMIS		Personal Protective Equipment
	Health Hazard	3	
	Fire Hazard	1	
	Reactivity	0	See Section 15.

Section 1. Chemical Product and Company Identification

Common Name/ Trade Name	**Pyrocatechol**	Code	P4870
		CAS#	120-80-9
Manufacturer	SPECTRUM CHEMICAL MFG. CORP. 14422 SOUTH SAN PEDRO STREET GARDENA, CALIFORNIA 90248-9985	RTECS	UX1050000
		TSCA	On the TSCA list.
Commercial Name(s)	Not available	CI#	Not available.
Synonym	1,2-Benzenediol	In case of emergency	
Chemical Name	Catechol	CHEMTREC (24hr) 800-424-9300	
Chemical Family	Not available.	Emergency phone: (310) 516-8000	
Chemical Formula	C6H6O2		
Supplier	SPECTRUM QUALITY PRODUCTS 14422 S. SAN PEDRO STREET GARDENA, CA 90248-9985		

Section 2. Composition and Information on Ingredients

		Exposure Limits			
Name	CAS#	TWA (mg/m3)	STEL (mg/m3)	CEIL (mg/m3)	% by Weight
Pyrocatechol	120-80-9				100

Toxicological Data on Ingredients: Pyrocatechol:

Section 3. Hazards Identification

Potential Acute Health Effects: Extremely dangerous in case of skin contact (corrosive, irritant), of eye contact (irritant), of ingestion, of inhalation. Very dangerous in case of skin contact (sensitizer, permeator). Corrosive to eyes and skin. Severe over-exposure can result in death. Can be fatal if inhaled or ingested. This product may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic: Extremely dangerous in case of skin contact (corrosive, irritant), of eye contact (irritant), of ingestion, of inhalation. Very dangerous in case of skin contact (sensitizer, permeator). CARCINOGENIC

Health Effects	EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. The substance is toxic to lungs, mucous membranes. Toxicity of the product to the reproductive system: Not available. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. COLD water may be used. DO NOT use an eye ointment. Seek medical attention.
Skin Contact	If the chemical got onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical touches the victim's exposed skin, such as the hands: Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. COLD water may be used. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.
Hazardous Skin Contact	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.
Inhalation	Allow the victim to rest in a well ventilated area. Seek immediate medical attention.
Hazardous Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.
Ingestion	Remove dentures if any. Watch for an obstruction in the victim's mouth. Remove if possible what is causing the obstruction but do not force fingers or a hard object between the victim's teeth. Have conscious person drink several glasses of water or milk. INDUCE VOMITING by sticking finger in throat. Seek immediate medical attention.
Hazardous Ingestion	Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Remove dentures if any. Watch for an obstruction in the victim's mouth. Remove if possible what is causing the obstruction but do not force fingers or a hard object between the victim's teeth. If a soft pad can be inserted between the victim's teeth, it will protect the tongue from being bitten. A badly bleeding tongue immensely complicates the patient's problems. Have conscious person drink several glasses of water or milk. INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. If convulsions occur, do not restrain the victim, but do remove objects with which he (she) might injure himself (herself) or orient the victim to prevent him (her) from striking fixed heavy objects. If the convulsions cease, turn the victim on the side or face down so that any fluid in the mouth will drain. Seek immediate medical attention.

Section 5. Fire and Explosion Data

Flammability of the Product	Combustible.
Auto-Ignition Temperature	Not available.
Flash Points	CLOSED CUP: 127.22.C (261.F) OPEN CUP: 136.67.C (278.F)
Flammable Limits	Not available.

Products of Combustion	These products are carbon oxides (CO, CO2).
Fire Hazards in Presence of Various Substances	No specific information is available in our database regarding the flammability of this product in presence of various materials.
Explosion in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. No specific information is available in our database regarding the product's risks of explosion in the presence of various materials.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemicals, CO2, water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.
Special Remarks on Fire Hazards	No additional remark.
Special Remarks on Explosion Hazards	No additional remark.

Section 6. Accidental Release Measures

Small Spill	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill	Poisonous solid. Stop leak if without risk. DO NOT get water inside container. DO NOT touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Call for assistance on disposal.

Section 7. Handling and Storage

Precautions	Keep locked up. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. DO NOT ingest. DO NOT breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.
Storage	Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place.Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engeneering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Splash goggles. Lab coat. Dust respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Gloves (impervious). Wear appropriate respirator when ventilation is inadequate.
Personal	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus

Protection in Case of a Large Spill	sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	TWA: 5 (ppm) TWA: 20 (mg/m) Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid.
Molecular Weight	110.11
pH (1% soln/water)	Not available.
Boiling Point	245.5.C (473.9.F)
Melting Point	105.C (221.F)
Critical Temperature	Not available.
Specific Gravity	1.344 (Water = 1)
Vapor Pressure	Not available.
Vapor Density	3.79 (Air = 1)
Volatility	Not available.
Odor Threshold	Not available.
Evaporation rate	Not available.
Viscosity	Not available.
Water/Oil Dist. Coeff.	Not available.
Ionicity (in Water)	Not available.
Dispersion Properties	See solubility in water.
Solubility	Soluble in cold water.

Odor	Slight.
Taste	Sweet. Bitter.
Color	Colorless.

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	No additional remark.
Incompatibility with Various Substances	No specific information is available in our database regarding the reactivity of this material in presence of various other materials.
Corrosivity	Non-corrosive in presence of glass.
Special Remarks on Reactivity	No additional remark.
Special Remarks on Corrosivity	No additional remark.

Section 11. Toxicological Information

Routes of Entry	Ingestion. Skin contact. Inhalation.

Toxicity to Animals	Acute oral toxicity (LD50): 210 mg/kg (Guinea pig). Acute dermal toxicity (LD50): 800 mg/kg (Rabbit).
Chronic Effects on Humans	The substance is toxic to lungs, mucous membranes. Toxicity of the product to the reproductive system: Not available.
Other Toxic Effects on Humans	Extremely dangerous in case of skin contact (corrosive, irritant), of eye contact (irritant), of ingestion, of inhalation. Very dangerous in case of skin contact (sensitizer, permeator).
Special Remarks on Toxicity to Animals	No additional remark.
Special Remarks on Chronic Effects on Humans	No additional remark.
Special Remarks on other Toxic Effects on Humans	No additional remark.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	These products are carbon oxides (CO, CO2).
Toxicity of the Products of Biodegradation	The products of degradation are more toxic.
Special Remarks on the Products of Biodegradation	No additional remark.

Section 13. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local or regional authorities.

Section 14. Transport Information

DOT Classification	DOT CLASS 6.1: Poisonous material.
Identification	Toxic solid, organic, n.o.s. (Pyrocatechol) UN2811 III
Special Provisions for Transport	No additional remark.
DOT (Pictograms)	

Federal and State Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312). Components present in this product at a level which could require reporting under the statute are:

NONE

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual report release of toxic chemicals that appear in 40 CFR 372 (used for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material. Components present in this product at a level which could require reporting under the statute are:

Pyrocatechol

Pensylvania Right-To-Know, Hazardous substance List, Hazardous Substances and Special hazardous Substances on the list must be identified when present in products. Components present in this product at a level which could require reporting under the statute are:

Pyrocatechol

Massachusetts Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products. Components present in this product at a level which could require reporting under the statute are:

Pyrocatechol

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal or greater than the reportable quantities (RQs) in 40 CFR 302.4. Components present in this product at a level which could require reporting under the statute are:

Pyrocatechol

WARNING: This product contains a chemical known to the State of California to cause cancer. Chemical ingredient(s) requiring this warning:

NONE

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. Chemical ingredient(s) requiring this warning: NONE

Other Classifications

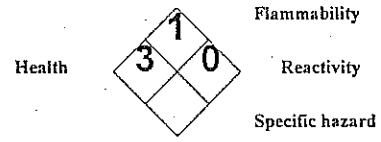
WHMIS (Canada)	WHMIS CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC).
DSCL (EEC)	R39- Danger of very serious irreversible effects. R41- Risk of serious damage to eyes. R21/22- Harmful in contact with skin and

Other Classifications	WHMIS (Canada)	WHMIS CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC).
	DSCL (EEC)	R39- Danger of very serious irreversible effects. R41- Risk of serious damage to eyes. R21/22- Harmful in contact with skin and if swallowed. R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed. R42/43- May cause sensitization by inhalation and skin contact.

HMIS (U.S.A.)

Health Hazard	2
Fire Hazard	1
Reactivity	0
Personal Protection	

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



Personal Protective Equipment

Protective Gloves (impervious).

Lab coat.

Dust respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Splash goggles.

Section 16. Other Information

References	Not available.		
Catalog Number(s)	P1455		
Other Special Considerations	No additional remark.		
Validated by	E. Brull on 12/17/96.	**Verified by Name**	E. Brull.
Emergency Phone:	(310)516-8000		
Notice to Reader	All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Chemical Mfg. Corp. assumes no responsibility for the completeness or accuracy of the information contained herein.		

PRODUCT: ASCORBIC ACID, VITAMIN C

ORDER NO: 209212
PROD NO : 720201

PHOTOGRAPHERS FORMULARY
CALL IN ADVANCE TO MEET
7079 HWY 83 N.
BOX 69
CONDON ,MT 59826

UNIVAR USA INC. (425)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

---------- EMERGENCY ASSISTANCE ----------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

****
PRODUCT IDENTIFICATION
****

PRODUCT NAME: ASCORBIC ACID, VITAMIN C

MSDS #: P1349VS

DATE ISSUED: 9/26/97

SUPERSEDES: 1/18/96

ISSUED BY: 005301

****
1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION
****

Chemical Name: Ascorbic Acid, Vitamin C .
Trade Name: Ascorbic Acid, Vitamin C USP-FCC .
Chemical Family: Organic
Formula: C6H8O6
Molecular Weight: 176.12 g/mol

****
2. COMPOSITION / INFORMATION ON INGREDIENTS

)DUCT: ASCORBIC ACID, VITAMIN C

ORDER NO: 209212
PROD NO : 720201

****

mponent	CAS #	Appr %
Ascorbic Acid	50-81-7	>99%

****

3. HAZARDS IDENTIFICATION

****

ERGENCY OVERVIEW
)t available.
:e product label for specific hazard warnings.
:e MSDS Section 3 - "Symptoms of Exposure" for health hazard information.

)pearance: White powder to crystals

)TENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

mptoms of Exposure:

'es: May cause irritation on contact with the eyes.

:in: May cause irritation on contact with the skin.

halation: Expected to cause general respiratory tract irritation after
halation of dust.

gestion: Material is virtually non-toxic.

dical Cond. Aggravated by Exposure:
known.

utes of Entry:
'e and skin contact and inhalation are anticipated as possible routes of
posure. Ingestion is not expected

rcinogenicity:
is material is not known to cause cancer in humans or animals.

****

4. FIRST AID MEASURES

****

ergency First Aid:

'es: Flush with copious amounts of water for fifteen minutes. Get medical
tention if symptoms persist.

Skin: Remove excess material and wash affected skin with soap and water. Gently dry area with a clean towel.

Inhalation: Remove to uncontaminated area. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Ingestion: Induce vomiting if conscious and as directed by a physician. Never give anything by mouth to an unconscious person. Get medical attention.

Notes EMS:
Emergency treatment information is not available for this product.

5. FIRE FIGHTING MEASURES

Flash Point (F): Not ignitable. Flash point not applicable.

Flammable Limits LEL (%): Not applicable.

Flammable Limits UEL (%): Not applicable.

Auto Ign: Not applicable.

Extinguishing Media:
Flood with water or use carbon dioxide, foam, or dry chemical.

Fire Fighting Procedures:
Positive pressure self-contained breathing apparatus and structural firefighers' protective clothing as required for other materials present.

Fire & Explosion Hazards:
Irritating or toxic gases, fumes, smoke, or particulates. Unusual fire or explosion hazards are not expected. Relative hazard is anticipated to be the same as normal combustible materials.

6. ACCIDENTAL RELEASE MEASURES

Spill Response:

Evacuate the area of all unnecessary personnel.

Wear suitable protective equipment listed under Exposure / Personal Protection.

XODUCT: ASCORBIC ACID, VITAMIN C

ORDER NO: 209212
PROD NO : 720201

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liminate any ignition sources until the area is determined to be free from
(plosion or fire hazards.

)ntain the release and eliminate its source, if this can be done without
isk.

ake up and containerize for proper disposal as described under Disposal.

)mply with Federal, State, and local regulations on reporting releases.

:fer to Regulatory Information for reportable quantity and other regulatory
ata.

7. HANDLING AND STORAGE

)ndling & Storage:
:ep container tightly closed. Store in general chemical storage. Protect
jainst physical damage. Handle carefully. Store away from incompatible
)terials. Avoid generating dust or vapors.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

NGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

)ntilation, Respiratory Protection, Protective Clothing, Eye Protection
)fety goggles or safety glasses with side shields are required.

)ovide adequate general mechanical ventilation and local exhaust ventilation.

)rk / Hygienic Practices:
)en handling quantities of material, be sure to wear appropriate protective
juipment as described. Respirators must be worn when Permissible Exposure
)mit (PEL) or Threshold Limit Value (TLV) is exceeded. Eye wash and safety
)ower should be readily available.

)sh thoroughly after handling. Do not take internally. Avoid breathing dust
· vapor when generated.
)chanical ventilation of work areas should be provided where the material is
)ing used.

POSURE GUIDELINES

HA - PEL:

PRODUCT: ASCORBIC ACID, VITAMIN C

ORDER NO: 209212
PROD NO : 720201

	TWA		STEL		CL		
Component	PPM	MG/M3	PPM	MG/M3	PPM	MG/M3	Skin
Ascorbic Acid							

ACGIH - TLV:

	TWA		STEL		CL		
Component	PPM	MG/M3	PPM	MG/M3	PPM	MG/M3	Skin
Ascorbic acid							

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (C 760 mmHg): Not applicable
Melting Point (C): 192 C
Specific Gravity (H2O = 1): not applicable
Bulk Density: N/A
Vapor Pressure (mm Hg): Not applicable.
Percent Volatile by Vol (%):<1% (volume)
Vapor Density (Air = 1): N/A
Evaporation Rate (BuAc = 1): Not applicable.
pH Aqueous Solution: Not determined
Solubility in Water (%): Soluble
Appearance: White powder to crystals

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions of storage or use.

Hazardous Polymerization:
Will not occur under normal conditions of storage or use.

Hazardous Decomposition:
Not determined

Conditions To Avoid:
NA

Materials To Avoid:
( ) Water
(X) Acids
(X) Bases
( ) Corrosives
(X) Oxidizers

) Other :

11. TOXICOLOGICAL INFORMATION

)xicity Data:
)ta not available. Material not fully investigated. Handle as a potentially
)xic material.

)xicological Findings:
) evaluation of toxicological data on this material is currently unavailable.
)e Section 3 of this MSDS for an overview of known or anticipated health
'fects.

12. DISPOSAL CONSIDERATIONS

'A Waste Numbers: N/A

'eatment:
)t applicable; material is a non-hazardous and non-regulated solid waste.
)nd bulk or containerized wastes of this material to a secure industrial
)ndfill or thermal oxidation facility. Incineration is not recommended for
)organics.

)ese methods are drawn from 40 CFR , Protection of Environment, and are to be
)plied only after thorough review of all applicable Methods of Treatment or
'eatment Standards. The waste generator is advised to contract with a
.censed Treatment, Storage, and Disposal facility when arranging for final
)sposal and to consult state and local authorities to determine whether
)y additional regulatory requirements need to be met.

13. TRANSPORT INFORMATION

T Proper Shipping Name:	Not regulated.
T Technical Name:	Technical name not required.
T ID Number:	Not applicable.
T Hazard Class:	Not applicable.
T Subsidiary Risk:	Not applicable.
T Packing Group:	N/A
T Label(s) Required:	Not applicable.
T Other:	Not applicable.

TA Proper Shipping Name: Not regulated.

PRODUCT: ASCORBIC ACID, VITAMIN C

ORDER NO: 209212
PROD NO : 720201

IATA ID Number: Not applicable.
IATA Hazard Class: Not applicable.
IATA Subsidiary Risk: Not applicable.
IATA Packing Group: N/A
IATA Label(s) Required: Not applicable.
IATA Other: Not applicable.

IMDG Proper Shipping Name: Not regulated.
IMDG ID Number: Not applicable.
IMDG Hazard Class: Not applicable.
IMDG Subsidiary Risk: Not applicable.
IMDG Packing Group: N/A
IMDG Label(s) Required: Not applicable.
IMDG Other: Not applicable.

14. REGULATORY INFORMATION

TSCA Inventory: N/A
TSCA Statement:
The components of this material appear in the Toxic Substances Control Act (TSCA) Chemical Substances Inventory and are available for commercial use.

OSHA Specifically Required

This material is not regulated by OSHA.

TSCA Memo: NONE

SARA Title III Hazard Categories:
Acute Health

Component	SARA EHS (302)	SARA EHS TPQ (lbs)	CERCLA RQ (lbs)
Ascorbic Acid			

Component	OSHA Floor List	SARA 313	DeMinimis for SARA 313 (%)
Ascorbic Acid			

15. OTHER INFORMATION

)DUCT: ASCORBIC ACID, VITAMIN C

ORDER NO: 209212
PROD NO : 720201

****

)mments:
NE

IIS Hazard Ratings:
ealth : 0
lammability : 0
eactivity : 0
otective Equipment : A
ecial Hazards : NA

'A = NOT AVAILABLE
'E = NOT ESTABLISHED

---------- FOR ADDITIONAL INFORMATION ----------

CONTACT: MSDS COORDINATOR UNIVAR USA INC.
DURING BUSINESS HOURS, PACIFIC TIME (425)889-3400

12/24/02 11:17 PRODUCT: 720201 CUST NO: 113365 ORDER NO: 209212

---------- NOTICE ----------

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ECIFICATION SHEET AND/OR A CERTIFICATE OF ANALYSIS. THESE CAN BE OBTAINED FROM
JR LOCAL UNIVAR SALES OFFICE.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE

PRODUCT: ASCORBIC ACID, VITAMIN C

ORDER NO: 209212
PROD NO : 720201

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*** E N D O F M S D S ***

MSDS Date: December 2, 2003
Emergency Contact: 1-800-424-9300

SECTION I

PRODUCT NAME: Sodium Sulfite, Catalyzed
CHEMICAL NAME: Sodium Sulfite, catalyzed
CHEMICAL FAMILY: Inorganic Sulfite
SYNONYMS: B 501; Catalyzed Anhydrous Sodium Sulfite
FORMULA: Na_2SO_3 + catalyst

DOT SHIPPING INFORMATION: Not DOT Regulated

SECTION II - HAZARDOUS INGREDIENTS

This material contains no ingredients which are known by Thatcher Company to be hazardous unless listed below.

HAZARDOUS MATERIAL	CAS NUMBER	w/w %	EXPOSURE LIMITS IN AIR
Sodium Sulfite	7757-83-7		TLV = 5 mg/m^3
Cobalt Sulfate (as Co)	10124-43-3		TLV = 0.05 mg/m^3* PEL = 0.1 mg/m^3

*recommended

The specific identity of some ingredients may be withheld for confidential business purposes. However, all known potential health effects from exposure to these ingredients are being addressed.

SECTION III - PHYSICAL DATA

BOILING POINT (F): N/A

SPECIFIC GRAVITY: 2.633 @ 15.4 EC

VAPOR PRESSURE (mm Hg): N/A

% VOLATILE, BY VOLUME: N/A

VAPOR DENSITY (air = 1): N/A

EVAPORATION RATE: N/A

SOLUBILITY IN WATER: Soluble

APPEARANCE AND ODOR: White to pink crystals or powder with saline, sulfurous taste.

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT: Nonflammable

FLAMMABLE LIMITS:
Lel: N/A Uel: N/A

EXTINGUISHING MEDIA:

Use any.

SPECIAL FIRE-FIGHTING PROCEDURES:
Wear self-contained breathing apparatus if necessary.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
When heated, catalyzed sodium sulfite decomposes and emits highly toxic fumes of sodium oxide and sulfur oxides.

SECTION V - REACTIVITY DATA

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS OR MATERIALS TO AVOID:
None.

HAZARDOUS DECOMPOSITION PRODUCTS:
When heated, catalyzed sodium sulfite decomposes and emits toxic fumes of sodium oxide and sulfur oxides.

SECTION VI - HEALTH HAZARD DATA

CARCINOGENIC LISTING:

NTP: No ingredients listed in this section.

IARC MONOGRAPHS: No ingredients listed in this section.

OSHA 29 CFR 1910: No ingredients listed in this section.

ENTRY ROUTES & EFFECTS OF OVEREXPOSURE:

Contact: Contact may irritate eyes.

Ingestion: If swallowed, can cause irritation of stomach, nausea and gas.

STATEMENT OF PRACTICAL TREATMENT:

Contact: Flush exposed area thoroughly with soap and water. For eyes, flush with cool water for at least 15 minutes. If irritation persists, get medical attention.

Ingestion: If swallowed, give several glasses of water and call a physician immediately.

SECTION VII - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:

Store in a cool, dry area .

STEPS TO BE TAKEN IF MATERIAL SPILLS OR LEAKS:

Wear proper safety equipment. Sweep up material and put into drums. Flush residue to sewer with large amounts of water (if permitted).

WASTE DISPOSAL METHOD:

Dispose of in landfill. Comply with all local, state and federal regulations.

OTHER PRECAUTIONS:

N/A

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Use dust mask as needed to avoid breathing dust.

VENTILATION:

Use adequate ventilation.

EYE PROTECTION:

Wear goggles or safety glasses.

SKIN PROTECTION:

Wear rubber gloves.

OTHER PROTECTIVE EQUIPMENT:

None required.

ACGIH = American Conference of Governmental Industrial Hygienists
CL = Ceiling Level
IARC = International Agency for Research on Cancer: Monographs
OSHA = Occupational Safety and Health Administration
N/A = Not Applicable
NTP = National Toxicology Program: Annual Report on Carcinogens
PEL = Permissible Exposure Level (OSHA)
TLV = Threshold Limit Value (ACGIH)
TWA = Time Weighted Average over 8 Hours
STEL = Short Term Exposure Limit (ACGIH)
ND = Not Determined

This information is, to the best of our knowledge, accurate but may not be complete. THATCHER COMPANY furnishes this information in good faith, but without warranty, representation or guarantee of its accuracy, completeness, or reliability.

10-1480 UREA

THATCHER COMPANY P.O. BOX 27407 SALT LAKE CITY, UTAH 84127
(801) 972-4587
FAX (801) 972-4606

CHEM

*3-216005-00

March 31, 1996

Photographers Formulary
P O Box 950
Condon, MT 59826

Attn : Regulatory Compliance Department

Dear Customer:

This letter is to inform you that the product listed below that we supply you contains one or more of the toxic chemicals covered by Section 313 of the Emergency Planning and Community Right-to-Know act of 1986. This law requires certain manufacturers to report on annual emissions of specified toxic chemicals and chemical categories.

If you are unsure if you must report, or require further information, call the EPA Emergency Planning and Community Right-to-Know Hotline at (800) 535-0202 or (202) 479-2449 (in Washington or Alaska).

Please attach this letter to the Material Safety Data Sheets for these products. Please also note that if you repackage or otherwise redistribute these products to industrial customers, this letter must accompany the MSDS.

0302561	Copper Sulfate-Lrg Crystal	50#
0302571	Copper Sulfate-Fine Diam	50#
0900311	Isopropynol-Anhy Tech	54 Gal
2100202	Urea	50#
2300152	Windshield Wash	Gal

12/95

THATCHER COMPANY OF NEVADA
P.O. Box 549
Carlin, Nevada 89822
(702) 754-6335
FAX 702-754-6167

THATCHER COMPANY / LAS VEGAS DIV
850 W. Lake Mead Drive
Henderson, Nevada 89014
(702) 564-7622
FAX 702-564-2818

THATCHER COMPANY OF MONTANA
3200 Raser Drive
Missoula, Montana 59801
(406) 721-3479
FAX 406-721-3489

10-1480 Rec'd 3-18-94

REPORT NUMBER: 971
MSDS NO: P10379VS
EFFECTIVE DATE: 07/16/93

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

VERSION: 00

PRODUCT: UREA PRILL COMMERCIAL GRADE

ORDER NO:
PROD NO :

VAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

---------- EMERGENCY ASSISTANCE ----------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

---------- FOR PRODUCT AND SALES INFORMATION ----------

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE AT
VW&R SPOKANE 509-534-0405 SPOKANE , WA

****

PRODUCT IDENTIFICATION

****

PRODUCT NAME: UREA PRILL COMMERCIAL GRADE

MSDS #: P10379VS

DATE ISSUED: 12/01/92

ISSUED BY: 005222

****

MANUFACTURER'S MSDS

****

NFPA FIRE HAZARD SYMBOL*

Health:	0	4 - Extreme
Flammability:	0	3 - High
Reactivity:	0	2 - Moderate
Special Hazards:		1 - Slight
		0 - Insignificant
		* - See Text

****

PRODUCT: UREA PRILL COMMERCIAL GRADE

ORDER NO:
PROD NO :

PRODUCT IDENTIFICATION

TRADE NAME: UREA PRILL - INDUSTRIAL GRADE

CAS NUMBER: 57-13-6

SYNONYM(S): CARBAMIDE; CARBONYLDIAMINE; CARBAMIDIC ACID

CHEMICAL FAMILY: AMIDE

MOLECULAR FORMULA: CH4N2O

MOLECULAR WEIGHT: 60.07

PRODUCT CODE: V 6463 HIERARCHY: 230.050

PRODUCT HAZARD SUMMARY

HEALTH
MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT
HEATED MATERIAL MAY CAUSE THERMAL BURNS

FLAMMABILITY
NON-COMBUSTIBLE

REACTIVITY
STABLE

PRODUCT HEALTH HAZARD INFORMATION

INGESTION: PRACTICALLY NON-TOXIC. Rat oral LD50 = 14,300 mg/kg. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea.

SKIN: SLIGHTLY IRRITATING. Repeated or prolonged skin contact may cause reddening, itching and inflammation. Contact with heated material may cause thermal burns.

EYE: SLIGHTLY IRRITATING. Contact with heated material may cause thermal burns.

INHALATION: May cause respiratory tract irritation.

PRODUCT: UREA PRILL COMMERCIAL GRADE

ORDER NO:
PROD NO :

SPECIAL TOXIC EFFECTS: Urea is a naturally occurring chemical in the body. It is an end product of protein metabolism and is excreted in the urine.

FIRST AID

INGESTION: If victim is conscious, give 1-3 glasses of water or milk to dilute stomach contents and induce vomiting. Do not make an unconscious or semi-conscious person vomit. Get medical attention.

SKIN CONTACT: Wash area of contact thoroughly with soap and water. Launder clothing before reuse. Get medical attention if irritation persists. For contact with molten product, do not remove contaminated clothing. Flush skin immediately with large amounts of cold water. If possible, submerge area in cold water. Pack with ice. Thermal burns require immediate medical attention.

EYE CONTACT: Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists.

INHALATION: Remove affected person from source of exposure. If not breathing, ensure open airway and institute cardiopulmonary resuscitation (CPR) - If breathing is difficult, administer oxygen if available. Get medical attention.

NOTES TO PHYSICIAN

Supportive measures for severe exposures. Pharmaceutical grade urea is used medically as a diuretic, but not recommended for those with kidney function problems.

EYE PROTECTION: Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses when working with this substance. Have eye washing facilities readily available where eye contact can occur.

SKIN PROTECTION: Wear impervious gloves and protective clothing to prevent skin contact. Suggested protective materials are: butyl rubber.

RESPIRATORY PROTECTION: If irritation is experienced, NIOSH approved respiratory protection should be worn. Ventilation and other forms of engineering controls are often the preferred means for controlling chemical exposures. Respiratory protection may be needed for non-routine or emergency situations.

PRODUCT: UREA PRILL COMMERCIAL GRADE

ORDER NO:
PROD NO :

PHYSICAL PROPERTIES

BOILING POINT: DECOMPOSES

SPECIFIC GRAVITY: NA

MELTING POINT: 133 - 135 C (271.4-275 F)

% VOLATILE: NA

VAPOR PRESSURE: NA

EVAPORATION RATE (WATER = 1): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: NA

% SOLUBILITY IN WATER: 119 GM/100 GM @ 25 C

OCTANOL/WATER PARTITION COEFFICIENT: ND

POUR POINT: NA

pH: ND

APPEARANCE/ODOR: WHITE GRANULES W/LITTLE-NO ODOR. NH3 ODOR UPON LONG STANDING.

FIRE AND EXPLOSION DATA

FLASH POINT: NA

AUTOIGNITION TEMPERATURE: NA

FLAMMABILITY LIMITS IN AIR (% BY VOL.) LOWER: NA

FLAMMABILITY LIMITS IN AIR (% BY VOL.) UPPER: NA

BASIC FIREFIGHTING PROCEDURES: Use extinguishing agent suitable for type of surrounding fire. Material itself burns with difficulty. Urea becomes slippery when wet--guard against falls.

PRODUCT: UREA PRILL COMMERCIAL GRADE

ORDER NO:
PROD NO :

UNUSUAL FIRE AND EXPLOSION HAZARDS: Irritating or toxic substances may be emitted upon thermal decomposition. Exposed firefighters should wear MSHA/NIOSH approved self-contained breathing apparatus with full face mask an full protective equipment. Uncontaminated urea is not an explosion hazard. May form explosive mixtures subject to spontaneous detonation when contaminated with strong acids (nitric or perchloric) or nitrate fertilizers.

REACTIVITY DATA

STABILITY/INCOMPATIBILITY: Stable when stored at 120 - 160 F and atmospheric pressure. May slowly hydrolyze to ammonium carbamate on long standing which eventually decomposes to ammonia and carbon dioxide. Avoid contact with strong oxidizers, acids or bases. Avoid contact with nitrates. Decomposes t ammonia, biuret, cyanuric acid, NOx, COx.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS: Thermal decomposition products ma be hazardous. Reacts with sodium or calcium hypochlorite to form explosive nitrogen trichloride.

ENVIRONMENTAL INFORMATION

Notification: No special procedures are required for clean-up of spills or leaks of this material. Avoid methods that result in water pollution. Caution should be exercised regarding personnel safety and exposure to the spilled material, as set forth elsewhere in this data sheet.

WASTE DISPOSAL: This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be characteristically hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. Check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, 264, 268 and 270 apply. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

PRODUCT: UREA PRILL COMMERCIAL GRADE

ORDER NO:
PROD NO :

SARA TITLE III INFORMATION: Listed below are the hazard categories for the Superfund Amendments and Reauthorization Act (SARA) Section 311/312 (40 CFR 370):

Immediate Hazard: Y
Delayed Hazard: Y
Fire Hazard: Y
Pressure Hazard: Y
Reactivity Hazard: Y

This product does not contain toxic chemicals (in excess of the applicable de minimis concentration) that are subject to the annual toxic chemical release reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313 (40 CFR 372).

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION: There may be specific regulations at the local, regional or state level that pertain to this material.

REGULATORY INFORMATION

All components of this product are listed on the TSCA inventory.

All components of this product are listed on the Canadian DSL Inventory.

The following Canadian Workplace Hazardous Materials Information System (WHMIS) categories apply to this product:

Compressed Gas	-	Flammable/Combustible	-
Oxidizer	-	Acutely Toxic	-
Other Toxic Effects	-	BioHazardous	-
Corrosive	-	Dangerously Reactive	-

SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION

HANDLING/STORAGE: Store in tightly closed containers in cool, dry, isolated, well-ventilated area away from heat, sources of ignition and incompatibles. Avoid contamination with other "look-alike" materials that may produce an explosion hazard (see Unusual Fire and Explosion Hazards section).

EMPTY CONTAINERS: Empty containers may contain product residue. Do not reuse without adequate precautions.

PRODUCT: UREA PRILL COMMERCIAL GRADE

ORDER NO:
PROD NO :

TRANSPORTATION REQUIREMENTS

****

D.O.T. PROPER SHIPPING NAME (49 CFR 172.101): NA

D.O.T. HAZARD CLASS (49 CFR 172.101): NA

UN/NA CODE (49 CFR 172.101): NA

BILL OF LADING DESCRIPTION (49 CFR 172.202): UREA

D.O.T. LABELS REQUIRED (49 CFR 172.101): NA

D.O.T. PLACARDS REQUIRED (49 CFR 172.504): NA

****

INGREDIENTS/HEALTH HAZARD INFORMATION

****

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REF.
Urea	57-13-6	99.90-100	10 mg/m3 (total) TLV (ACGIH), as nuisance dust 5 mg/m3 (resp.); 15 mg/m3 (total) PEL (OSHA), as nuisance dust
Remaining components not determined hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens)			NA

ND = No Data
NA = Not Applicable

PRODUCT: UREA PRILL COMMERCIAL GRADE

ORDER NO:
PROD NO :

FOR ADDITIONAL INFORMATION

CONTACT: MSDS COORDINATOR VW&R SPOKANE
DURING BUSINESS HOURS, PACIFIC TIME (206)889-3400

03/15/94 10:57 PRODUCT: CUST NO: ORDER NO:

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* * * E N D O F M S D S * * *

PRODUCT: SODIUM CARBONATE MONOHYDRATE / SODA ASH

ORDER NO: 178505
PROD NO : 628695

PHOTOGRAPHERS FORMULARY
CALL IN ADVANCE TO MEET
MC-31
BOX 89
CONDON ,MT 59826

VAN WATERS & ROGERS INC. , A ROYAL PAKHOED COMPANY (425)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

---------- EMERGENCY ASSISTANCE ----------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

PRODUCT NAME: SODIUM CARBONATE MONOHYDRATE / SODA ASH

MSDS #: MZ93245

EFFECTIVE DATE: 7/9/99

SUPERSEDES: NEW

==========
SODIUM CARBONATE MONOHYDRATE
==========

1. PRODUCT IDENTIFICATION

SYNONYMS: CARBONIC ACID, DISODIUM SALT MONOHYDRATE; DISODIUM CARBONATE MONOHYDRATE; SODA ASH
CAS NO: 497-19-8
MOLECULAR WEIGHT: 124.00
CHEMICAL FORMULA: NA2CO3.H2O

==========

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO	PERCENT	HAZARDOUS

PRODUCT: SODIUM CARBONATE MONOHYDRATE / SODA ASH

ORDER NO: 178505
PROD NO : 628695

SODIUM CARBONATE	497-19-8	100%	YES

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER! MAY CAUSE EYE BURNS. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT.

POTENTIAL HEALTH EFFECTS

INHALATION:
INHALATION OF DUST MAY CAUSE IRRITATION TO THE RESPIRATORY TRACT. SYMPTOMS FROM EXCESSIVE INHALATION OF DUST MAY INCLUDE COUGHING AND DIFFICULT BREATHING. EXCESSIVE CONTACT IS KNOWN TO CAUSE DAMAGE TO THE NASAL SEPTUM.

INGESTION:
SODIUM CARBONATE IS ONLY SLIGHTLY TOXIC, BUT LARGE DOSES MAY BE CORROSIVE TO THE GASTRO-INTESTINAL TRACT WHERE SYMPTOMS MAY INCLUDE SEVERE ABDOMINAL PAIN, VOMITING, DIARRHEA, COLLAPSE AND DEATH.

SKIN CONTACT:
EXCESSIVE CONTACT MAY CAUSE IRRITATION WITH BLISTERING AND REDNESS. SOLUTIONS MAY CAUSE SEVERE IRRITATION OR BURNS.

EYE CONTACT:
CONTACT MAY BE CORROSIVE TO EYES AND CAUSE CONJUCTIVAL EDEMA AND CORNEAL DESTRUCTION. RISK OF SERIOUS INJURY INCREASES IF EYES ARE KEPT TIGHTLY CLOSED. OTHER SYMPTOMS MAY APPEAR FROM ABSORPTION OF SODIUM CARBONATE INTO THE BLOODSTREAM VIA THE EYES.

CHRONIC EXPOSURE:
PROLONGED OR REPEATED SKIN EXPOSURE MAY CAUSE SENSITIZATION.

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. GET MEDICAL ATTENTION.

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 SOAP AND WATER FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES. GET MEDICAL ATTENTION. 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.

NOTE TO PHYSICIAN:
CONSIDER ENDOSCOPY IN ALL SUSPECTED CASES OF SODIUM CARBONATE POISONING. PERFORM BLOOD ANALYSIS TO DETERMINE IF DEHYDRATION, ACIDOSIS, OR OTHER ELECTROLYTE IMBALANCES OCCURRED.

==========

5. FIRE FIGHTING MEASURES

FIRE:
NOT CONSIDERED TO BE A FIRE HAZARD.

EXPLOSION:
NOT CONSIDERED TO BE AN EXPLOSION HAZARD. NOT CONSIDERED AN EXPLOSION HAZARD, BUT SODIUM CARBONATE MAY EXPLODE WHEN APPLIED TO RED-HOT ALUMINUM.

FIRE EXTINGUISHING MEDIA:
USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE.

SPECIAL INFORMATION:
USE PROTECTIVE CLOTHING AND BREATHING EQUIPMENT APPROPRIATE FOR THE SURROUNDING FIRE.

==========

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.

PRODUCT: SODIUM CARBONATE MONOHYDRATE / SODA ASH

ORDER NO: 178505
PROD NO : 628695

==========

7. HANDLING AND STORAGE

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. KEEP IN A TIGHTLY CLOSED CONTAINER, STORED IN A COOL, DRY, VENTILATED AREA. PROTECT AGAINST PHYSICAL DAMAGE. ISOLATE FROM INCOMPATIBLE SUBSTANCES.

==========

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 POWDER.

BOILING POINT:
400C (752F)

PRODUCT: SODIUM CARBONATE MONOHYDRATE / SODA ASH

ORDER NO: 178505
PROD NO : 628695

ODOR:
ODORLESS.

MELTING POINT:
851C (1564F) LOSES WATER AT CA. 100C.

SOLUBILITY:
30 G/100 ML WATER @ 60C (140F)

VAPOR DENSITY (AIR=1):
NO INFORMATION FOUND.

DENSITY:
2.25

VAPOR PRESSURE (MM HG):
NO INFORMATION FOUND.

PH:
AQUEOUS SOLUTIONS ARE STRONGLY ALKALINE.

EVAPORATION RATE (BUAC=1):
NO INFORMATION FOUND.

% VOLATILES BY VOLUME @ 21C (70F):
0

==========

10. STABILITY AND REACTIVITY

STABILITY:
STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE.

HAZARDOUS DECOMPOSITION PRODUCTS:
OXIDES OF CARBON AND SODIUM OXIDE.

HAZARDOUS POLYMERIZATION:
WILL NOT OCCUR.

INCOMPATIBILITIES:
FLUORINE, ALUMINUM, PHOSPHOROUS PENTOXIDE, SULFURIC ACID, ZINC, LITHIUM, MOISTURE, CALCIUM HYDROXIDE AND 2,4,6-TRINITROTOLUENE. REACTS VIOLENTLY WITH ACIDS TO FORM CARBON DIOXIDE.

CONDITIONS TO AVOID:
MOISTURE, DUSTING AND INCOMPATIBLES.

==========

11. TOXICOLOGICAL INFORMATION

FOR ANHYDROUS SODIUM CARBONATE: ORAL RAT LD50: 4090 MG/KG; INHALATION RAT LC50: 2300 MG/M3/2H; IRRITATION EYE RABBIT: 50 MG SEVERE; INVESTIGATED AS A MUTAGEN, REPRODUCTIVE EFFECTOR.

---------CANCER LISTS---

---NTP CARCINOGEN---

PRODUCT: SODIUM CARBONATE MONOHYDRATE / SODA ASH

ORDER NO: 178505
PROD NO : 628695

INGREDIENT	KNOWN	ANTICIPATED	IARC	CATEGORY
SODIUM CARBONATE (497-19-8)	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
SODIUM CARBONATE (497-19-8)	YES	YES	YES	YES

--------CHEMICAL INVENTORY STATUS - PART 2--------

		--CANADA--		
INGREDIENT	KOREA	DSL	NDSL	PHIL.
SODIUM CARBONATE (497-19-8)	YES	YES	NO	YES

PRODUCT: SODIUM CARBONATE MONOHYDRATE / SODA ASH

ORDER NO: 178505
PROD NO : 628695

--------FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 1----------

INGREDIENT	-SARA 302- RQ	TPQ	------SARA 313----- LIST	CHEMICAL CATG
SODIUM CARBONATE (497-19-8)	NO	NO	NO	NO

--------FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 2----------

INGREDIENT	CERCLA	-RCRA- 261.33	-TSCA- 8(D)
SODIUM CARBONATE (497-19-8)	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: S5

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

PRODUCT: SODIUM CARBONATE MONOHYDRATE / SODA ASH

ORDER NO: 178505
PROD NO : 628695

FOR ADDITIONAL INFORMATION

CONTACT: MSDS COORDINATOR VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (425)889-3400

09/21/99 07:05 PRODUCT: 628695 CUST NO: 113365 ORDER NO: 178505

NOTICE

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*** E N D O F M S D S ***

OxyChem®

Responsible Care®
A Public Commitment

PHOTOGRAPHER'S FORMULARY INC
HC 31 BOX 89
CONDON MT
59826

SPG S000101377

01/28/98

Dear Customer:

Our records indicate that you have purchased the product(s) listed below from Occidental Chemical Corporation (OxyChem). Enclosed is our latest Material Safety Data Sheet prepared in accordance with the Hazard Communication Standard (OSHA 29 CFR 1910.1200) and the SARA Notification Requirement (EPA 40 CFR 372.45). You may be required to make the MSDS available to employees in any work area where the product is stored or used.

New York State Chemical Bulk Storage Technical Guidance and Recommended Practices are incorporated into and appended to this MSDS for those products where required. Please make sure it is distributed to and retained by the department responsible for New York State Bulk Storage compliance.

In accordance with EPA rules, should any of your employees allege or exhibit any new health effects related specifically to the product, please advise us in writing of the circumstances of the allegation according to 40 CFR, Chapter I, Part 717, 8(c).

OxyChem's commitment to quality extends to providing our customers with appropriate health, safety and environmental information. If you desire any additional non-emergency health, safety or environmental information about the product(s) listed below, please write directly to:

Occidental Chemical Corporation
Product Stewardship Department
5005 LBJ Freeway
P.O. Box 809050
Dallas, Texas 75380-9050

Yours truly,

Michael A. Buczynski

Michael A. Buczynski
Manager - Product Stewardship
(Hazard Communication)

M1245 POTASSIUM BICHROMATE CRYSTAL

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS NUMBER : M1245 ISSUE DATE : 01-01-98

PRODUCT NAME : POTASSIUM BICHROMATE CRYSTAL

Manufacturer's Name and Address : Occidental Chemical Corporation, Occidental Tower
5005 LBJ Freeway, P.O. Box 809050
Dallas, TX 75380 (972) 404-3800

24 HOUR EMERGENCY TELEPHONE : 1-800-733-3665 OR 972-404-3228

TO REQUEST AN MSDS : 1-800-699-4970

CUSTOMER SERVICE : 1-800-752-5151

PRODUCT USE : Photographic Chemicals, Metal Finishing, Pigments

CHEMICAL NAME : Potassium Bichromate Crystal

CHEMICAL FORMULA : $K_2Cr_2O_7$

SYNONYMS/COMMON NAMES : Potassium Dichromate

2. COMPOSITION/INFORMATION ON INGREDIENTS

CAS NUMBER / NAME
7778-50-9 Chromic acid ($H_2Cr_2O_7$), dipotassium salt

EXPOSURE LIMITS	PERCENTAGE	
PEL:0.1 mg/m3 Ceiling as CrO_3	VOL	ND
TLV:0.05 mg/m3 TWA, A1 as Cr	WT	99-100

COMMON NAMES:
DIPOTASSIUM DICHROMATE
CHROMIUM COMPOUND#
POTASSIUM DICHROMATE

Listed On(List Legend Below):
00 02 06 08 11 15 18 21 22 25 50 51

2. COMPOSITION/INFORMATION ON INGREDIENTS (Continued)

Chemical name used in the SARA Section 313 List of Toxic Chemicals (40 CFR - Section 372.65) if different from CAS name.

LIST LEGEND

00 TSCA INVENTORY	02 SARA TOXIC CHEM, SECTION 313
06 NTP "KNOWN HUMAN CARCINOGEN"	08 IARC HUMAN CARCINOGEN, GROUP 1
11 CA PROP 65 - CARCINOGEN	15 PA SPECIAL & ENV HAZ SUBSTANCE
18 NY HAZARDOUS SUBSTANCES	21 NJ SPECIAL HEALTH HAZ SUB
22 CANADIAN DOMESTIC SUB LIST	25 TSCA SEC12 EXPORT NOTIFICATION
50 PHILIPPINES INVENTORY (PICCS)	51 EINECS

3. HAZARDS IDENTIFICATION

********** EMERGENCY OVERVIEW **********

OXIDIZER. SEVERELY IRRITATING TO RESPIRATORY TRACT, EYES, SKIN AND DIGESTIVE TRACT. CONTACT WITH BROKEN SKIN MAY RESULT IN ULCERS. CONTACT CAN CAUSE SEVERE DAMAGE INCLUDING BURNS AND BLINDNESS. MAY CAUSE KIDNEY AND LIVER DAMAGE. PROLONGED OR REPEATED IHHALATION MAY CAUSE ULCERATION OR PERFORATION OF NASAL SEPTUM. MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. POTENTIAL CANCER HAZARD. CONTAINS MATERIAL WHICH MAY CAUSE CANCER. RISK OF CANCER DEPENDS ON DURATION AND LEVEL OF EXPOSURE.

Bright orange-red crystals, no odor.

****

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY:

Eyes, Ingestion, Inhalation, Skin.

TARGET ORGANS:

Respiratory Tract, Skin, Eyes, Gastrointestinal Tract, Kidneys, Liver, Nasal Septum.

IRRITANCY:

Severe, All routes of exposure.

SENSITIZING CAPABILITY:

May cause skin sensitization.

REPRODUCTIVE EFFECTS:

None known.

CANCER INFORMATION:

Contains a listed carcinogen. See Sections 2 & 11.

3. HAZARDS IDENTIFICATION (Continued)

SHORT-TERM EXPOSURE (ACUTE)

INHALATION:

Inhalation of dust or mist may cause severe irritation of the nasal septum and respiratory tract.

May cause kidney and liver damage.

EYES:

Contact can cause severe damage including burns and blindness.

SKIN:

Contact can cause severe burns. Contact with broken skin may lead to formation of firmly marginated "chrome sores". May cause allergic contact dermatitis. Dermal absorption of large amounts may result in kidney failure and death.

INGESTION:

Can cause severe tissue destruction. Kidney failure may follow and result in death. May cause liver damage.

REPEATED EXPOSURE (CHRONIC)

Prolonged or repeated contact may cause conjunctivitis,"chrome sores" on skin (especially broken skin), or ulceration and perforation of the nasal septum. Epidemiological studies indicate long term exposure to dusts and mists in chrome processing industry is associated with increases in respiratory tract cancer in man; the causative agent is not known. Epidemiological studies have not demonstrated any increased risk of cancer at exposure levels below the current PEL.

SYNERGISTIC MATERIALS:

None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Pre-existing disorders affecting target organs.

4. FIRST AID MEASURES

EYES:

IMMEDIATELY FLUSH EYES WITH A DIRECTED STREAM OF WATER for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

4. FIRST AID MEASURES (Continued)

SKIN:

Immediately flush contaminated areas with water. Remove contaminated clothing and footwear. Wash contaminated areas with plenty of soap and water. Wash clothing before reuse. Discard footwear which cannot be decontaminated. GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION:

Remove to fresh air. If breathing is difficult, have a trained person administer oxygen. If breathing has stopped, have a trained person administer artificial respiration. If conscious, irrigate nasal passages and mouth with water. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. (If available, give several glasses of milk.) If vomiting occurs spontaneously, keep airway clear and give more water. GET MEDICAL ATTENTION IMMEDIATELY. Accident victims should be given 5-10 gm ascorbic acid (not effervescent tablets) dissolved in water. This dose can be repeated several times.

NOTES TO PHYSICIAN:

Massive overexposure to solutions of this product could lead to kidney failure and death. It has been reported that there is little value from chelating agents, however, ascorbic acid administered intravenously and locally is an effective antidote (converting Cr6 to Cr3) in preventing renal tubular failure. Skin ulcers may be treated by removal from exposure, daily cleansing, debridement, and application of antibiotic cream and dressing. Dialysis may be necessary as indicated. Up to 10 grams Ascorbic Acid in stomach. Plus I.V. Ascorbic Acid I gram in divided doses. Monitor blood chemistries, force fluids for diuresis (of chrome). Do not attempt chelation! Protect renal tubules.

5. FIRE FIGHTING MEASURES

Flash Point: Non-flammable

Method: Not Applicable

Autoignition Temperature: Not combustible

FLAMMABLE LIMITS IN AIR, BY % VOLUME

Upper: Not applicable
Lower: Not applicable

EXTINGUISHING MEDIA:

Non-flammable / Non-combustible.

Use agents appropriate for surrounding fire.

5. FIRE FIGHTING MEASURES (Continued)

FIRE FIGHTING PROCEDURES:

Wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus and full protective clothing.

FIRE AND EXPLOSION HAZARD:

Oxidizer. Avoid contact with organic materials (see Section 10).

SENSITIVITY TO MECHANICAL IMPACT:

Not sensitive.

SENSITIVITY TO STATIC DISCHARGE:

Not sensitive.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Evacuate unnecessary personnel.

Follow protective measures provided under Personal Protection in Section 8.

People performing the cleanup should have full protective equipment including a NIOSH/MSHA approved positive pressure self-contained breathing apparatus.

ENVIRONMENTAL PRECAUTIONS:

Do not allow entry into sewers and waterways.

Spills or releases should be reported, if required, to the appropriate local, state and federal agencies.

METHODS FOR CLEANING UP:

Stop leaks. Remove as much as possible (e.g. vacuum truck or shovel into steel container). Then treat the spill area with a reducing agent to convert the hexavalent chromium to the trivalent form (sodium bisulfite, sodium sulfite, ferrous sulfate or ferrous chloride). Neutralize with a weak base (sodium bicarbonate, soda ash or lime). Following neutralization, soak up with inert absorbent material (e.g. sand) and place in a closed, labelled container and store in a safe place to await disposal.

7. HANDLING AND STORAGE

HANDLING:

Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the MSDS.

7. HANDLING AND STORAGE (Continued)

Do not get in eyes, on skin or clothing.

Avoid prolonged or repeated exposure.

Avoid breathing airborne particulates; wear respiratory protection when exposure is possible.

Wash contaminated clothing before reuse.

Wash thoroughly with soap and water after handling.

SPECIAL MIXING AND HANDLING INSTRUCTIONS:

Do not allow contact with materials as noted in Section 10.

STORAGE:

Store in tightly closed, labelled containers away from combustible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

The work area should be isolated and contained and provided with adequate local exhaust ventilation or other controls where dust or fumes may be generated. The number of persons exposed should be minimized.

Certain processes like chrome pigment production, high temperature welding or cutting, etc., may form materials more hazardous to humans than this product. The materials may be the formation of slightly soluble salts (barium, zinc, calcium or other chromates) or fumes of chromium/chromic acid, respectively which are known to be human carcinogens. Engineering controls and local exhaust ventilation is required to ensure that worker exposure is below current PEL.

PERSONAL PROTECTION

RESPIRATORY:

Wear a NIOSH/MSHA approved respirator following manufacturer's recommendations, where dusts, mists, fumes or vapors may occur.

EYE/FACE:

Wear chemical safety goggles plus full face shield to protect against splashing when appropriate (ANSI Z87.1).

SKIN:

Protective clothing should be worn and changed at least daily. Wash contaminated clothing with soap and water and dry before reuse. Advise the laundry of the material contaminating the clothing.

Wear chemical resistant gloves such as PVC or nitrile.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

OTHER:

Emergency shower and eyewash facility should be in close proximity (ANSI Z358.1).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Bright orange-red crystals, no odor.

Odor Threshold: Not applicable

Specific Gravity (Water=1): 2.68 @ 25°C

Vapor Pressure: Not Applicable

Vapor Density (Air=1): Not Applicable

Density: 100 lbs/cu ft

Evaporation Rate: Not Applicable

% Volatiles by Wt: Not Applicable

Boiling Point: Not Applicable

Freezing Point: Not Applicable

Melting Point: 398°C (748°F)

Solubility in Water (% by wt.): 11.7% @ 20°C

pH: 3.6 - 4.4 depending on concentration of solution

Octanol/Water Partition Coefficient: Not Applicable

Thermal Decomposition Temperature: Not Available

Other: Not available

VOC (g/l. by wt.): Not applicable

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:

X	STABLE		UNSTABLE

REACTS WITH:

	AIR		OXIDIZERS		METALS
	WATER		ACIDS	X	OTHER
X	HEAT		ALKALIS		NONE

10. STABILITY AND REACTIVITY (Continued)

HAZARDOUS POLYMERIZATION:

_____ OCCURS __X__ WILL NOT OCCUR

COMMENTS:

Avoid contact with organic materials, oils, greases or any easily oxidizable material.

This product is a mild oxidizing agent in solution, but becomes a strong oxidizing agent when mixed with a strong acid solution.

HAZARDOUS DECOMPOSITION PRODUCTS:

None.

11. TOXICOLOGICAL INFORMATION

7778-50-9 Chromic acid (H2Cr2O7), dipotassium salt

ACUTE ORAL LD50 :	(rat)	57 mg/kg (both sexes)
ACUTE DERMAL LD50 :	(rabbit)	1.17 g/kg (both sexes)
ACUTE INHALATION LC50 :	(rat, 4hr)	94 mg/m3 (both sexes)

PRIMARY SKIN IRRITATION:

	Dry Solid 4 hrs	Moistened 4 hrs	Dry Solid 24 hrs	Moistened 24 hrs
Erythema	0/6	6/6		
Edema	0/6	5/6		
Necrosis	0/6	3/6		
Corrosion			1/1	1/1

NTP and IARC have determined that there is sufficient evidence for the carcinogenicity of hexavalent chromium compounds both in humans and experimental animals. However, the hexavalent chromium compounds responsible (for human carcinogenicity) cannot be specified.

There is laboratory evidence that aqueous sodium bichromate administered directly into the lung, at the highest tolerated dose, over the lifetime of rats, causes a significant increase in the incidence of lung cancer. Potassium bichromate tested in the same manner would be expected to produce a similar response.

Potassium bichromate contains hexavalent chromium and is classified as an IARC (Group 1) carcinogen, and a known carcinogen by NTP.

12. ECOLOGICAL INFORMATION

7778-50-9 Chromic acid ($H_2Cr_2O_7$), dipotassium salt

AQUATIC ECOTOX DATA
Fish:

LC50 (96 hr.)	(Fathead minnow)	33.2-43.3	mg/L**
LC50 (96 hr.)	(Bluegill sunfish)	213.0	mg/L**
LC50 (96 hr.)	(Rainbow trout)	69.0	mg/L**
NOEC(7 day)	(Fathead minnow,growth)	2.94-3.19	mg/L**
LOEC(7 day)	(Fathead minnow,growth)	5.56-5.84	mg/L**
BCF (22 day)	(Rainbow trout)	< 1*	

* based on concentration in muscle
** concentrations as chrome (VI)

Invertebrates:

LC50 (48 hr.)	(Water flea)	4.0	mg/L**
LC50 (96 hr.)	(Rotifer)	3.1	mg/L**
EC50 (48 hr.)	(Water flea)	19.9-112	ug/L**
MATC (7 day)	(Water flea,reproduction)	0.8-3.2	ug/L**
BCF (84 day)	(Oyster)	125	
BCF (84 day)	(Blue mussel)	192	

** concentrations as chrome (VI)

Plants:

EC50 (96 hr.)	(Green algae, growth)	183	ug/L**
BCF	(Benthic algae, phytoplankton)	1600 & 2300	

** concentration as chrome (VI)

TERRESTRIAL ECOTOX DATA
Wildlife:

LD50 (oral)	(Mouse)	190	mg/Kg
LC50 (120 hr.)	(Quail)	4,400	ppm

Plants:
No data available

ENVIRONMENTAL FATE DATA
Biotic:
Biodegradation Inorganic, not subject to biodegradation

Abiotic:
(1/2 life) Persists as Cr(VI) or Cr(III)

12. ECOLOGICAL INFORMATION (Continued)

There is a significant amount of information concerning the environmental fate and effects of dipotassium dichromate (potassium dichromate) and chromium. Chromium compounds have been found to exhibit moderate to high toxicity to aquatic and terrestrial organisms. Potassium dichromate will persist primarily as chrome (III) and chrome (VI) in water and soil systems. Material released to the atmosphere is subject to deposition with particulates or rainfall. Under certain environmental conditions chromium may be subject to low levels of bioaccumulation in both aquatic and terrestrial plants and animals. There is no indication of biomagnification in the food chain. Precautions should be taken to prevent the accidental release of this material to the environment.

13. DISPOSAL CONSIDERATIONS

Treat with a reducing agent to convert hexavalent chromium to trivalent chromium, then neutralize with a weak base. The solid material meeting treatment standards may be disposed of via an approved chemical waste landfill in accordance with all federal, state and local requirements. (See Section 6 of the MSDS).

14. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME: Toxic Solid, Inorganic, NOS (Potassium Bichromate)

DOT HAZARD CLASS: 6.1

DOT IDENTIFICATION NO: UN3288

DOT PACKING GROUP: III

DOT HAZARDOUS SUBSTANCE: RQ 10 lbs. (Potassium Bichromate)

DOT MARINE POLLUTANT(S): Not Applicable

ADDITIONAL DESCRIPTION REQUIREMENT: Not Applicable

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

This product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372. See Section 2, List Legend 02.

15. REGULATORY INFORMATION (Continued)

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Material Safety Data Sheet available to your employees.

To aid our customers in complying with regulatory requirements, SARA Title III Hazard Categories for this product are indicated below. If the word "YES" appears next to any category, this product may be reportable by you under the requirements of 40.CFR.370. Please consult those regulations for details.

TSCA:

All components of this product that are required to be on the TSCA inventory are listed on the inventory.

SARA/TITLE III HAZARD CATEGORIES:

Immediate(Acute) Health:	YES	Reactive Hazard	NO
Delayed(Chronic) Health:	YES	Sudden Release of Pressure	NO
Fire Hazard:	YES		

HMIS HAZARD RATINGS:

HEALTH HAZARD: 3* FIRE HAZARD: 0 REACTIVITY: 1

STATE REGULATIONS:

State of California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):
WARNING: This product contains a chemical known to the State of California to cause cancer.

See Section 2. COMPOSITION/INFORMATION ON INGREDIENTS list legend for applicable state regulation.

Consult local laws for applicability.

INTERNATIONAL REGULATIONS:

Consult the regulations of the importing country.

CANADA:

WHMIS Hazard Class: C, D1A, D2A, D2B

16. OTHER INFORMATION

For additional non-emergency health, safety or environmental information telephone (972) 404-2405 or write to:

Occidental Chemical Corporation
Product Stewardship Department
5005 LBJ Freeway
P.O. Box 809050
Dallas, Texas 75380

16. OTHER INFORMATION (Continued)

MSDS LEGEND:

ACGIH = American Conference of Governmental Industrial Hygienists

CAS = Chemical Abstracts Service Registry Number

CEILING = Ceiling Limit (15 Minutes)

CEL = Corporate Exposure Limit

OSHA = Occupational Safety and Health Administration

PEL = Permissible Exposure Limit (OSHA)

STEL = Short Term Exposure Limit (15 Minutes)

TDG = Transportation of Dangerous Goods (Canada)

TLV = Threshold Limit Value (ACGIH)

TWA = Time Weighted Average (8 Hours)

WHMIS = Worker Hazardous Materials Information System (Canada)

* = See Section 3 Hazards Identification - Repeated Exposure(Chronic) Information

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17. WARNING LABEL INFORMATION

SIGNAL WORD:

DANGER

HAZARD WARNINGS:

OXIDIZER.

SEVERELY IRRITATING TO RESPIRATORY TRACT, EYES, SKIN AND DIGESTIVE TRACT.

CONTACT WITH BROKEN SKIN MAY RESULT IN ULCERS.

CONTACT CAN CAUSE SEVERE DAMAGE INCLUDING BURNS AND BLINDNESS.

17. WARNING LABEL INFORMATION (Continued)

MAY CAUSE KIDNEY AND LIVER DAMAGE.

PROLONGED OR REPEATED IHHALATION MAY CAUSE ULCERATION OR PERFORATION OF NASAL SEPTUM.

MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.

POTENTIAL CANCER HAZARD. CONTAINS MATERIAL WHICH MAY CAUSE CANCER. RISK OF CANCER DEPENDS ON DURATION AND LEVEL OF EXPOSURE.

PRECAUTIONS:

Avoid breathing dust, vapors or mist.

Avoid contact with eyes, skin and clothing.

Wear a NIOSH/MSHA approved respirator, chemical splash goggles, full face shield, protective clothing and chemical resistant gloves.

Use with adequate ventilation to maintain exposure level below PEL.

Wash thoroughly after handling.

Avoid contact with organic or easily oxidizable materials.

Before using, read Material Safety Data Sheet (MSDS) for this material.

FIRST AID

EYES:

IMMEDIATELY FLUSH EYES WITH A DIRECTED STREAM OF WATER for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN:

Immediately flush contaminated areas with water. Remove contaminated clothing and footwear. Wash contaminated areas with plenty of soap and water. Wash clothing before reuse. Discard footwear which cannot be decontaminated. GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION:

Remove to fresh air. If breathing is difficult, have a trained person administer oxygen. If breathing has stopped, have a trained person administer artificial respiration. If conscious, irrigate nasal passages and mouth with water. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. (If available, give several glasses of milk.) If vomiting occurs spontaneously, keep airway clear and give more water. GET MEDICAL ATTENTION IMMEDIATELY. Accident victims should be given 5-10 gm ascorbic acid (not effervescent tablets) dissolved in water. This dose can be repeated several times.

17. WARNING LABEL INFORMATION (Continued)

IN CASE OF SPILL OR LEAK:

Stop leaks. Remove as much as possible (e.g. vacuum truck or shovel into steel container). Then treat the spill area with a reducing agent to convert the hexavalent chromium to the trivalent form (sodium bisulfite, sodium sulfite, ferrous sulfate or ferrous chloride). Neutralize with a weak base (sodium bicarbonate, soda ash or lime). Following neutralization, soak up with inert absorbent material (e.g. sand) and place in a closed, labelled container and store in a safe place to await disposal.

NEVER FLUSH TO SEWER.

Spills or releases should be reported, if required, to the appropriate local, state and federal agencies.

FIRE:

Use NIOSH/MSHA self-contained breathing apparatus and full protective equipment.

Use extinguishing medium as appropriate for surrounding fire.

HANDLING AND STORAGE:

Store in tightly closed, labelled containers away from combustible materials.

DISPOSAL:

Dispose of spilled or waste product after appropriate treatment in a licensed landfill in accordance with federal, state, and local regulations.

INFORMATION REQUIRED BY FEDERAL, STATE OR LOCAL REGULATIONS:

This Product Contains:

CAS#	NAME
7778-50-9	Chromic acid ($H_2Cr_2O_7$), dipotassium salt

HMIS RATING: HEALTH 3* FLAMMABILITY 0 REACTIVITY 1

LABEL NUMBER: 1097M1245

For Industrial Use Only

10-11-10

PRODUCT: SODIUM BISULFATE, ANHYDROUS GLOBULAR, TECHNICAL

ORDER NO: 232929
PROD NO : 344820

PHOTOGRAPHERS FORMULARY
CALL IN ADVANCE TO MEET
7079 HWY 83 N.
BOX 69
CONDON ,MT 59826

UNIVAR USA INC. (425)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

---------- EMERGENCY ASSISTANCE ----------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

PRODUCT NAME:	SODIUM BISULFATE, ANHYDROUS GLOBULAR, TECHNICAL
MSDS NUMBER:	P12108VS
DATE ISSUED:	01/17/2005
SUPERSEDES:	03/01/2004
ISSUED BY:	008548

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MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Product Name: SODIUM BISULFATE, ANHYDROUS GLOBULAR, TECHNICAL
Product Code: SBS01
Synonyms: Sodium acid sulfate, Nitre cake, Sodium hydrogen sulfate
Product Use: Cleaning compounds, pH adjustment
Manufacturer:
Jones-Hamilton Co.
Name/Address: 30354 Tracy Road

PRODUCT: SODIUM BISULFATE, ANHYDROUS GLOBULAR, TECHNICAL

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PROD NO : 344820

Walbridge, OH 43465
24-Hour Emergency Phone Numbers (U.S.A.):
Ohio: (419) 666-9838
CHEMTREC: (800) 424-9300

SECTION 2 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Off-white granular material, with the consistency of salt.
WARNING: Causes eye irritation. May cause skin and respiratory tract irritation. Avoid contact with eyes and skin. Avoid breathing dust. Wash exposed skin thoroughly after handling.

Potential Health Effects: See Section 11 for more information. Likely Routes of Exposure: Eye contact, skin contact, inhalation.

Eye: Causes mild to severe irritation. May cause burn if not flushed with water.

Skin: Prolonged exposure may cause moderate irritation. May cause burn if not flushed with water.

Inhalation: Inhalation of dust may irritate or burn nose, throat and lungs.

Ingestion: Small amounts (tablespoonful) swallowed are not likely to cause injury; however, swallowing large amounts may irritate or bum digestive tract.

Medical Conditions Aggravated by Exposure: Pre-existing respiratory conditions.

This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC, or NTP.

This material meets the definition of an irritant as defined in OSHA's Hazard C ommunication Standard (29 CFR 1910.1200).

Potential Environmental Effects: Material in dry form is not hazardous to the environment. However, readily dissolves in water to form a weak acidic solution that is harmful to aquatic life.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS#	% (by weight)
Sodium bisulfate	7681-38-1	91.5 - 94.7
Sodium sulfate	7757-82-6	4.8 - 8.0
Moisture	7732-18-5	0.1 - 0.5

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SECTION 4 FIRST AID MEASURES

NOTE TO PHYSICIAN: Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. May aggravate pre-existing respiratory conditions.

Eyes: Immediately flush eyes with water for at least 15 minutes, lifting eyelids to thoroughly flush. If redness or irritation persists, get prompt medical attention.

Skin: Immediately flush affected area with water for at least 15 minutes. If burn occurs, seek immediate medical attention.

Inhalation: Remove to fresh air. If irritation or discomfort persists, seek medical attention.

Ingestion: If large amounts are ingested (greater than tablespoonful), drink large quantities of milk or water. Follow with Milk of Magnesia, beaten eggs or vegetable oil. DO NOT induce vomiting. Contact Physician immediately.

SECTION 5 FIRE FIGHTING MEASURES

Extinguishing Media: Use extinguishing media appropriate for surrounding fire. Because material will readily dissolve in water to form a weak acid solution, avoid water contact with material if possible.

Hazardous Combustion Products: At temperatures over 8060 F (430 deg C), product will decompose generating oxides of sulfur.

Fire Fighting Instructions: Product readily dissolves in water to form a weak acid solution. If using water, wear acid protective equipment. No gases or toxic fumes are emitted from this reaction. However, if elevated temperatures (> 806 deg F) are reached, self-contained breathing apparatus should be worn.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protection recommended in Section 8.

Land Spill: Vacuum or shovel material and place in disposal container. Avoid excessive dust generation. Dilute residual material with ample supply of water and direct to sanitary sewer if Federal, State or Local regulations permit.

Water Spill: Readily dissolves in water to form a weak acid solution. If water is isolated or can be contained, neutralize with weak alkaline

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solution.

Notify appropriate authorities if required by regulations.

SECTION 7 HANDLING AND STORAGE

Handling: Wear all recommended personal protective clothing when handling. Avoid contact with eyes. Wash thoroughly after handling. Minimize dust generation. Avoid breathing dust.

Storage: Material is hygroscopic and will readily absorb moisture. Keep containers tightly closed. DO NOT store where exposed to moist conditions. DO NOT store near strong alkalis.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:
Sodium bisulfate - Not established.
Sodium sulfate - Not established.

Engineering Controls: Provide general and/or local exhaust ventilation to maintain airborne particulate below nuisance levels (>10 mg/m3).

Eye/Face Protection: Safety glasses or goggles.

Skin Protection: Rubber gloves and cotton-blend coveralls.

Respiratory Protection: In dusty atmospheres (>10 mg/m3), use a NIOSH-approved dust respirator.

General Hygiene Considerations: There are no known health hazards associated with this material when used as recommended. Follow good industrial hygiene practices including but not limited to: (1) avoid breathing dust; (2) avoid contact with eyes; and (3) wash thoroughly after handling.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Off-white granular material.
Odor: Fresh to Pungent
Physical State: Dry (Anhydrous) crystalline solid
pH: <1 @ 5% aqueous solution spherical shape beads
Solubility (in water): 1080 g/L @ 68 deg F (20 deg C)
Particle Size: 10.75 mm diameter
Flammability (solid): Material is non-combustible
Melting Point: 350 deg F (177 deg C)
Bulk Density: 80 - 85 lbs/ft3 (loose)
Molecular Formula: NaHSO4

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Molecular Weight: 120

SECTION 10 STABILITY AND REACTIVITY

Stability: Stable.

Conditions to Avoid: DO NOT store dry product where exposed to moist conditions.

Incompatible Materials: Avoid contact with strong alkaline material such as caustic. Dissolves readily in water to form a weak acid solution. DO NOT MIX with liquid chlorine bleach, ammonia cleansers or similar products.

Hazardous Decomposition Products: Only if heated over 806 deg F (430 deg C), at which sulfur dioxide and sulfur trioxide are formed.

Possibility of Hazardous Reactions: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Reported Human Effects: No human data are available for this product.

Reported Animal Effects: Oral - LD50 (rat) 2800 mg/kg.

Skin irritation - This material is neither corrosive nor destructive to the skin of New Zealand rabbits. Occasionally, a very slight rash may appear.

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity: This product readily dissolves in water to form a weak acid solution. A 0.05 percent or greater (by weight) solution of this product will likely be acutely harmful to aquatic life.

Chemical Fate Information: Material will decompose in soil. Studies show that there are no adverse effects of applying the main ingredient in this product (sodium bisulfate) directly to crops. In fact, there are existing products on the market that use sodium bisulfate as a soil additive to improve crop production. However, do not apply excessive quantities to soil.

SECTION 13 DISPOSAL CONSIDERATIONS

If this product as supplied becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA), 40 CFR Part 261. Dispose of in accordance with local, State and Federal laws and regulations.

SECTION 14 TRANSPORT INFORMATION

PRODUCT: SODIUM BISULFATE, ANHYDROUS GLOBULAR, TECHNICAL

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Shipment in the United States of America (DOT): Not regulated.

Shipment by water (IMO): Not regulated. Shipment by air (ICAO & IATA): Not regulated.

Shipment in Canada (TDG): Not regulated. Surface Shipments in Europe: Not regulated.

SECTION 15 REGULATORY INFORMATION

TSCA: All chemical substances in this product are listed in U.S. TSCA Section 8(b) Inventory.

CERCLA (RQ): This product contains no Hazardous Substances listed in 40 CFR Part 302. SARA Title III: Section 311/312 Hazard Class - Acute. This product contains none of the substances subject to the reporting requirements of Section 313 (40 CFR Part 372).

California Proposition 65: This product does not contain any ingredient known to the State of California to cause cancer or reproductive toxicity as listed under the Safe Drinking Water and Toxic Enforcement Act of 1986.

New Jersey: Department of Health RTK List - sn 1704. Special Hazardous Substances - Corrosive Australia: List of Designated Hazardous Substances - Corrosive (R34), Harmful (R37)

Canada - WHMIS: Controlled Product Hazard Class D2B, This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

Canada - CEPA: All components of this product are on the Domestic Substances List (DSL), and acceptable for use under the provisions of CEPA.

European Union (EU): Dangerous Substances (Annex I)
- EC No. 231-665-7
- Labels: Xi (irritant)
- Risk Phrases: R41
- Safety Phrases: S(2-)24-26

Germany: Water Classification (VwVwS) - Water Hazard Class: 1

Switzerland: Toxic Substance Classification - Giftklasse 3

Inventories: Australian Inventory of Chemical Substances; China; European Industry of Existing Commercial Chemical Substances (231-665-7); European Union Inventory of Cosmetic Ingredients, Other Ingredients; ICCA High Production Volume Working List; Japan Existing and New Chemical Substances

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(1-83, 1-491, 1-501); Korea Existing and Evaluated Chemical Substances (KE-31481); Philippines Inventory of Chemicals and Chemical Substances; OECD List of High Production Volume Chemicals.

SECTION 16 OTHER INFORMATION

HMIS Rating: Health - 1; Flammability - 0; Physical Hazard - 0

NFPA 704 Rating: Health - 1; Fire - 0; Reactivity - 0

(0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard)

---------- FOR ADDITIONAL INFORMATION ----------

CONTACT: MSDS COORDINATOR UNIVAR USA INC.
DURING BUSINESS HOURS, PACIFIC TIME (425)889-3400

07/06/05 07:16 PRODUCT: 344820 CUST NO: 113365 ORDER NO: 232929

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