

PHOTOGRAPHERS' FORMULARY

FORMULARY UNIVERSAL CONCENTRATE DEVELOPER

Makes 20 liters of working solution

Formulary Universal Concentrate Developer is an economical hydroquinone-phenidone developer, which gives good contrast in films. The chemicals are used to prepare a stock solution which is diluted 1:19 for film.

This developer is also an excellent paper developer, providing neutral tones, deep blacks and a pleasing tonal gradation. The stock solutions are usable for 4 to 5 months after mixing; the working solutions are one shot. A 1liter kit is used to make 5 to 20 liters of working solution depending upon dilution used.

CHEMICALS CONTAINED IN THIS KIT:

CHEMICAL	AMOUNT
Sodium Sulfite	110 grams
Hydroquinone	31 grams
Potassium Carbonate, anhydrous	100 grams
Phenidone	1.3 grams
Potassium Bromide	5 grams
Sodium Hydroxide	2 grams

CHEMICAL SAFETY:

All chemicals are dangerous and must be treated with respect. Please read the chemical warnings on each package. Please exercise extreme care when handling, and avoid skin or eye contact.

HYDROQUINONE: Hydroquinone is considered by the EPA to be hazardous and a skin sensitizer.

SODIUM HYDROXIDE: Although your kit contains only a small amount of solid Sodium Hydroxide, it must be treated with special care. Sodium Hydroxide, as a solid or in solution, is a dangerous chemical. It is a corrosive and when spilled on the skin, will cause a chemical burn. Its action is insidious because the burn occurs without pain. When working with Sodium Hydroxide wash your hands frequently and without soap. If you detect a soapy feeling while washing, Sodium Hydroxide is present. In such a case, wash thoroughly with soap and water.

FORMULARY UNIVERSAL CONCENTRATE: 01-0020 CONTINUED

Beads or pellets of solid Sodium Hydroxide are easily spilled during solution preparation. If spillage occurs outside of a sink, all of the spilled solid must be cleaned up, use a damp disposable towel. If the solid is not cleaned up, it will absorb the moisture from the air and form a puddle of very caustic hydroxide which will not evaporate. We strongly urge you to wear both safety glasses and rubber gloves when working with solid Sodium Hydroxide or its solutions.

The user assumes all risks upon accepting these chemicals. IF FOR ANY REASON YOU DO NOT WISH TO ASSUME ALL RISKS, PLEASE RETURN THE CHEMICALS WITHIN 30 DAYS FOR A FULL REFUND.

MIXING THE STOCK SOLUTION

You will need a graduated cylinder or other measuring device, a mixing container and a plastic storage bottle, each with a capacity of at least one liter.

CHEMICAL	AMOUNT
Water (52° C/125° F)	750 ml
Sodium Sulfite	110 g
Hydroquinone	31 g
Potassium Carbonate, anhydrous	100 g
Phenidone	1.3 g
Potassium Bromide	5 g
Sodium Hydroxide	2 g
Water (cold) to make	1000 ml

Dissolve the chemicals in the order given. Be sure each chemical is COMPLETELY dissolved before adding the next one. When all of the solids are completely dissolved, add the cold water and stir the solution to ensure it is thoroughly mixed. Store the solution in brown plastic bottle or in a dark area or use a dark brown plastic bottle.

LIFE OF THE SOLUTIONS

The stock solution has a shelf life of 4-5 months, the working solutions are one shot.

USING THE DEVELOPER

The working solution is prepared by mixing 1 part stock solution with 19 parts of water. For example, to prepare 500 ml of working solution, dilute 25 ml of the stock solution with 475 ml of water. Be sure to stir the final solution to ensure it is mixed thoroughly.



THATCHER COMPANY MATERIAL SAFETY DATA SHEET
PRODUCT: SODIUM SULFITE, CATALYZED
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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



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PRODUCT: SODIUM SULFITE, CATALYZED
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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: Na₂SO₃ + 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:



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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.



GARDENA, CA
NEW BRUNSWICK, NJ

Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table border="1"> <tr> <td>Health Hazard</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Fire Hazard</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Reactivity</td> <td style="text-align: center;">0</td> </tr> </table>	Health Hazard	2	Fire Hazard	1	Reactivity	0	
Health Hazard	2							
Fire Hazard	1							
Reactivity	0							
See Section 15.								

Section 1. Chemical Product and Company Identification		Page Number: 1
Common Name/ Trade Name	Hydroquinone	Catalog Number(s). H1080, HY113
Manufacturer	SPECTRUM CHEMICAL MFG. CORP. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	CAS# 123-31-9
Commercial Name(s)	Not available.	RTECS MX3500000
Synonym	1,4-Benzenediol	TSCA TSCA 8(b) inventory: Hydroquinone
Chemical Name	1,4-Dihydroxybenzene	CI# Not applicable.
Chemical Family	Aromatic alcohol. (Aromatic.)	IN CASE OF EMERGENCY CHEMTREC (24hr) 800-424-9300 CALL (310) 516-8000
Chemical Formula	C ₆ H ₄ (OH) ₂	
Supplier	SPECTRUM CHEMICAL MFG. CORP. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	

Section 2. Composition and Information on Ingredients					
Name	CAS #	Exposure Limits			% by Weight
		TWA (mg/m ³)	STEL (mg/m ³)	CEIL (mg/m ³)	
1) Hydroquinone	123-31-9	2			100
Toxicological Data on Ingredients	Hydroquinone: ORAL (LD50): Acute: 320 mg/kg [Rat]. DERMAL (LD50): Acute: 5970 mg/kg [Mammal].				

Section 3. Hazards Identification	
Potential Acute Health Effects	Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.
Potential Chronic Health Effects	CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Continued on Next Page

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	After contact with skin, wash immediately with plenty of water. 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.
Serious 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.
Serious 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. Seek medical attention.
Ingestion	Do not induce vomiting. 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. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	May be combustible at high temperature.
Auto-Ignition Temperature	515.56°C (960°F)
Flash Points	CLOSED CUP: 165°C (329°F).
Flammable Limits	Not available.
Products of Combustion	These products are carbon oxides (CO, CO ₂).
Fire Hazards in Presence of Various Substances	Slightly flammable to flammable in presence of open flames and sparks.
Explosion Hazards 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.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Special Remarks on Fire Hazards	Combustible when exposed to heat or flame.
Special Remarks on Explosion Hazards	Not available.

Section 6. Accidental Release Measures

Small Spill	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill	Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7. Handling and Storage

Precautions	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. Wear suitable protective clothing. 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. Keep away from incompatibles such as oxidizing agents, alkalis.
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. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering 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 an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	TWA: 0.4 (ppm) TWA: 2 (mg/m ³)
Consult local authorities for acceptable exposure limits.	

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid. (Crystals solid.)	Odor	Not available.
Molecular Weight	110.11 g/mole	Taste	Not available.
pH (1% soln/water)	7 [Neutral.]	Color	White.
Boiling Point	286°C (546.8°F)		
Melting Point	170°C (338°F)		
Critical Temperature	Not available.		
Specific Gravity	1.33 (Water = 1)		
Vapor Pressure	Not applicable.		
Vapor Density	3.81 (Air = 1)		
Volatility	Not available.		
Odor Threshold	Not available.		
Water/Oil Dist. Coeff.	Not available.		
Ionicity (in Water)	Not available.		
Dispersion Properties	See solubility in water, methanol, diethyl ether.		
Solubility	Soluble in cold water, hot water, methanol, diethyl ether.		

Continued on Next Page

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Not available.
Incompatibility with various substances	Reactive with oxidizing agents, alkalis.
Corrosivity	Non-corrosive in presence of glass.
Special Remarks on Reactivity	Air and light sensitive.
Special Remarks on Corrosivity	Not available.
Polymerization	No.

Section 11. Toxicological Information

Routes of Entry	Dermal contact. Eye contact. Inhalation. Ingestion.
Toxicity to Animals	Acute oral toxicity (LD50): 320 mg/kg [Rat]. Acute dermal toxicity (LD50): 5970 mg/kg [Mammal].
Chronic Effects on Humans	The substance is toxic to lungs, the nervous system, mucous membranes.
Other Toxic Effects on Humans	Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.
Special Remarks on Toxicity to Animals	Not available.
Special Remarks on Chronic Effects on Humans	An allergen.
Special Remarks on other Toxic Effects on Humans	Material is irritating to mucous membranes and upper respiratory tract.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The products of degradation are as toxic as the original product.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Disposal

Section 14. Transport Information

DOT Classification CLASS 6.1: Poisonous material.

Identification : Hydroquinone : UN2662 PG: III

Special Provisions for Transport Not available.

DOT (Pictograms)



Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations Pennsylvania RTK: Hydroquinone
 Massachusetts RTK: Hydroquinone
 TSCA 8(b) inventory: Hydroquinone
 SARA 302/304/311/312 extremely hazardous substances: Hydroquinone
 SARA 313 toxic chemical notification and release reporting: Hydroquinone
 CERCLA: Hazardous substances.: Hydroquinone

California Proposition 65 Warnings

Other Regulations OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications
 WHMIS (Canada) CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC).
 CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
 DSCL (EEC) R36/38- Irritating to eyes and skin.

HMIS (U.S.A.)

Health Hazard	2
Fire Hazard	1
Reactivity	0
Personal Protection	(E)

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

Health



Flammability

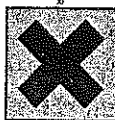
Reactivity

Specific hazard

WHMIS (Canada) (Pictograms)



DSCL (Europe) (Pictograms)



TDG (Canada)
(Pictograms)



ADR (Europe)
(Pictograms)



Protective Equipment



Gloves.



Lab coat.



Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.



Splash goggles.

Section 16. Other Information

MSDS Code H3320

References

-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.
 -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec.
 -SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984.
 -The Sigma-Aldrich Library of Chemical Safety Data, Edition II.
 -Guide de la loi et du règlement sur le transport des marchandises dangereuses au Canada. Centre de conformité international Ltée. 1986.

Other Special Considerations

Not available.

Validated by Sonia Owen on 1/20/2003.

Verified by Sonia Owen.

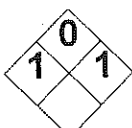

Printed 1/21/2003.

CALL (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 Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

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

Section 1. Chemical Product and Company Identification			
Common Name/ Trade Name	Potassium carbonate	Code	P4210
Manufacturer	SPECTRUM CHEMICAL MFG. CORP. 14422 SOUTH SAN PEDRO STREET GARDENA, CALIFORNIA 90248-9985	CAS#	584-08-7
Commercial Name(s)	Not available	RTECS	TS7750000
Synonym	Not available.	TSCA	On the TSCA list.
Chemical Name	Not available.	CI#	Not available.
Chemical Family	Not available.	In case of emergency CHEMTREC (24hr) 800-424-9300 Emergency phone: (310) 516-8000	
Chemical Formula	K ₂ CO ₃		
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/m ³)	STEL (mg/m ³)	CEIL (mg/m ³)	% by Weight
Potassium carbonate	584-08-7				100
Toxicological Data on Ingredients	Potassium carbonate: ORAL (LD50): Acute: 1870 mg/kg (Rat).				

Section 3. Hazards Identification	
Potential Acute Health Effects	Extremely dangerous in case of skin contact (irritant), of eye contact (irritant). Very dangerous in case of skin contact (corrosive), of ingestion, of inhalation. Corrosive to eyes and skin. 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 (irritant), of eye contact (irritant). Very dangerous in case of skin contact (corrosive), of ingestion, of inhalation. CARCINOGENIC EFFECTS: Not

Health Effects

available. **MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Not available. The substance is toxic to 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 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. **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. 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 medical attention.

Inhalation

Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Hazardous Inhalation

No additional information.

Ingestion

Remove dentures if any. 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. **NEVER** give an unconscious person anything to ingest. Seek medical attention.

Hazardous Ingestion

No additional information.

Section 5. Fire and Explosion Data

Flammability of the Product Non-flammable.

Auto-Ignition Temperature Not applicable.

Flash Points Not applicable.

Flammable Limits Not applicable.

Products of Combustion	Not applicable.
Fire Hazards in Presence of Various Substances	Not applicable.
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	Non-flammable.
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. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
Large Spill	Our database contains no additional information in case of a spill and/or a leak of the product. Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7. Handling and Storage

Precautions	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. Keep away from incompatibles as acids, moisture.
Storage	No specific storage is required. Use shelves or cabinets sturdy enough to bear the weight of the chemicals. Be sure that it is not necessary to strain to reach materials, and that shelves are not overloaded.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering 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

Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid. (Powdered solid.)	Odor	Odorless.
Molecular Weight	138.21	Taste	Not available.
pH (1% soln/water)	Not available.	Color	White.
Boiling Point	Decomposes.		
Melting Point	891.C (1635.8.F)		
Critical Temperature	Not available.		
Specific Gravity	2.29 (Water = 1)		
Vapor Pressure	Not available.		
Vapor Density	Not available.		
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	Not available.		
Solubility	Not available.		

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	Extremely reactive or incompatible with acids. Slightly reactive to reactive with moisture.
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. Inhalation.

Toxicity to Animals Acute oral toxicity (LD50): 1870 mg/kg (Rat).

**Chronic Effects
on Humans**

The substance is toxic to mucous membranes. Toxicity of the product to the reproductive system: Not available.

**Other Toxic
Effects on Humans**

Extremely dangerous in case of skin contact (irritant), of eye contact (irritant).
Very dangerous in case of skin contact (corrosive), of ingestion, of inhalation.

**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**

Some metallic oxides.

**Toxicity of the
Products of
Biodegradation**

The product itself and its products of degradation are not 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

Not a DOT controlled material (United States).

Identification

Not applicable (PIN and PG).

**Special Provisions
for Transport**

Not applicable.

DOT (Pictograms)

Section 15. Other Regulatory Information and 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:

NONE

Pennsylvania 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:

NONE

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:

NONE

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:

NONE

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-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC)

R22- Harmful if ingested.
R41- Risk of serious damage to eyes.

Other Classifications

WHMIS (Canada)

WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC).

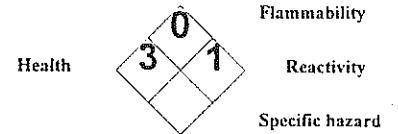
DSDL (EEC)

R22- Harmful if ingested.
R41- Risk of serious damage to eyes.

HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	0
Reactivity	1
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)** P1235, P1236, P1237, P1238, P1240, XX612**Other Special Considerations** No additional remark.**Validated by** E. Brull on 12/17/96.**Verified by** E. Brull.
Name**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.

WEGO CHEMICAL & MINERAL CORP

239 Great Neck Road

Great Neck, NY 11021

Date of Preparation: 3/2001

PHENIDONE

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: Phenidone

Chemical Formula: C₉H₁₀N₂O

CAS Number: 92-43-3

Other Designations: 1-Phenyl-3-pyrazolidinone; 1-Phenyl-3-pyrazolidone; 1-Phenyl-3-oxopyrazolidine; 3-Pyrazolidinone, 1-phenyl-; Pyrazolid-3-one, 1-phenyl-

General Use:

Emergency Telephone: 1-800-424-9300 (Chemtree)

Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	EINECS/ELINCS	% wt or % vol
Phenidone	92-43-3	202-155-1	97

Trace Impurities:

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
Phenidone	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.

Section 3 - Hazards Identification

☆☆☆☆☆ **Emergency Overview** ☆☆☆☆☆

Appearance: slightly beige. Warning! Material is light sensitive. Harmful if swallowed. May cause eye and skin irritation. May cause respiratory and digestive tract irritation.

HMIS	
H	2
F	0
R	0
PPE†	
†Sec. 8	

Potential Health Effects

Primary Entry Routes: Inhalation, ingestion, eye and skin contact.

Target Organs:

Acute Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation.

Ingestion: Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea.

Inhalation: May cause respiratory tract irritation.

Carcinogenicity: IARC, NTP, and OSHA do not list Phenidone as a carcinogen.

Medical Conditions Aggravated by Long-Term Exposure:

Chronic Effects: No information found.

Section 4 - First Aid Measures

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

Skin: Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. DO NOT use mouth-to-mouth respiration.

After first aid, get appropriate in-plant, paramedic, or community medical support.

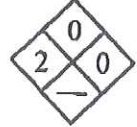
Note to Physicians: Treat symptomatically and supportively.

Special Precautions/Procedures:

PHENIDONE

Section 5 - Fire-Fighting Measures**Flash Point:** Not applicable**Autoignition Temperature:** Not applicable**LEL:** Not available**UEL:** Not available**Flammability Classification:****Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.**Unusual Fire or Explosion Hazards:****Hazardous Combustion Products:****Fire-Fighting Instructions:** Do not release runoff from fire control methods to sewers or waterways.**Fire-Fighting Equipment:** Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

NFPA

**Section 6 - Accidental Release Measures****Spill /Leak Procedures:** Use proper personal protective equipment as indicated in Section 8.**Small Spills:** Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.**Large Spills****Containment:** For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.**Cleanup:****Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120).**Section 7 - Handling and Storage****Handling Precautions:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing.

Avoid ingestion and inhalation. Store protected from light.

Storage Requirements: Keep containers tightly closed. Store protected from light. Store in a cool, dry area away from incompatible substances.**Section 8 - Exposure Controls / Personal Protection****Engineering Controls:****Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.**Administrative Controls:****Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.**Warning!** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.**Protective Clothing/Equipment:** Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.**Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

PHENIDONE

Section 9 - Physical and Chemical Properties

Physical State: Solid powder
Appearance: Slightly beige powder
Odor: none reported
Vapor Pressure: not available
Vapor Density (Air=1):
Formula Weight: 162.19
Density/Specific Gravity (H₂O=1, at 4 °C):
pH:

Water Solubility: Soluble in hot water.
Other Solubilities:
Boiling Point:
Freezing/Melting Point: 122 -123 °C
Viscosity:
Refractive Index:
Surface Tension:
% Volatile:
Evaporation Rate: not available

Section 10 - Stability and Reactivity

Stability: Phenidone is stable at room temperature in closed containers under normal storage and handling conditions. Light sensitive.
Polymerization: Hazardous polymerization can or cannot occur.
Chemical Incompatibilities: Strong oxidizing agents, strong acids, strong bases, direct light.
Conditions to Avoid: Incompatible materials, light, dust generation, excess heat.
Hazardous Decomposition Products: Thermal oxidative decomposition of Phenidone can produce nitrogen oxides, carbon monoxide, carbon dioxide, nitrogen.

Section 11- Toxicological Information

Toxicity Data:*

Epidemiology: No information found.
Teratogenicity: No information found.
Reproductive Effects: No information found.
Neurotoxicity: No information found.
Mutagenicity: No information found.

Acute Oral Effects:
Rat, oral, LD₅₀: 200 mg/kg

* See NIOSH, RTECS (UQ8750000), for additional toxicity data.

Section 12 - Ecological Information

Ecotoxicity: Not available.
Environmental Fate: Not available.
Environmental Degradation: Not available.
Soil Absorption/Mobility: Not available.

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.
Disposal Regulatory Requirements:
Container Cleaning and Disposal:

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101):

Shipping Name: Toxic solid, organic, n.o.s. (1-Phenyl-3-Pyrazolidinone)
Shipping Symbols:
Hazard Class: 6.1
ID No.: UN2811
Packing Group: III
Label: TOXIC
Special Provisions (172.102):

Packaging Authorizations
a) Exceptions:
b) Non-bulk Packaging:
c) Bulk Packaging:

Quantity Limitations
a) Passenger, Aircraft, or Railcar:
b) Cargo Aircraft Only:

Vessel Stowage Requirements
a) Vessel Stowage:
b) Other:

Section 15 - Regulatory Information

US FEDERAL

PHENIDONE

10-0870

TSCA

CAS# 92-43-3 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ)

None of the chemicals in this material have an RQ.

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 92-43-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XN

Risk Phrases:

R 22 Harmful if swallowed.

Section 16 - Other Information

Disclaimer: All information, recommendations and suggestions appearing herein are based upon sources believed to be reliable. However, it is the users responsibility to determine the safety, toxicity and suitability for its own use of this product. WEGO CHEMICAL & MINERAL CORP. DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE USE BY OTHERS OF THIS PRODUCT.

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UNIVAR USA INC.

PAGE: 001

MSDS NO: P21725VS

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 07/16/04

VERSION: 003

PRODUCT: POTASSIUM BROMIDE

ORDER NO: 226085

PROD NO : 614395

PHOTOGRAPHERS FORMULARY
CALL IN ADVANCE TO MEET
7079 HWY 83 N.
BOX 89
CONDON ,MT 59826

UNIVAR USA INC.
6100 CARILLON POINT

, KIRKLAND

(425)889-3400
, WA 98033

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

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

PRODUCT IDENTIFICATION

PRODUCT NAME: POTASSIUM BROMIDE

MSDS NUMBER: P21725VS

DATE ISSUED: 11/19/02

SUPERCEDES: NEW

ISSUED BY: 006137

REVIEWED DATE: 07/16/2004

THIS MSDS HAS BEEN REVIEWED ON 07/16/2004, AND IS
CURRENT AS OF THE DATE ISSUED ABOVE.

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE & THE COMPANY

CHEMICAL NAME POTASSIUM BROMIDE
CHEMICAL FORMULA KBR
MOLECULAR WEIGHT 120.98

TYPE OF PRODUCT AND USE

PRODUCT: POTASSIUM BROMIDE

ORDER NO: 226085

PROD NO : 614395

FOR USE IN PHOTOGRAPHIC EMULSIONS AND DEVELOPING SOLUTIONS
HEAT STABILIZER IN NYLON
BROMINATING AGENT

COMPANY BROMINE COMPOUNDS LTD.
P.O.B 180, BEER SHEVA 84101, ISRAEL
TEL +972-8-6297830

SUPPLIER AMERIBROM, INC.
2115 LINWOOD AVENUE, FORT LEE, NEW JERSEY 07024-5004
USA TEL: 201 242 6560

EMERGENCY TELEPHONE CHEMTREC (800)424-9300

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	WEIGHT %	ACGIH-TLV DATA	OSHA (PEL) DATA
POTASSIUM BROMIDE 7758-02-3	99.5	NOT DETERMINED	NOT DETERMINED

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW WHITE, ODOURLESS, CRYSTALLINE SOLID
IRRITANT TO EYES

POTENTIAL HEALTH EFFECTS:

- EYE CONTACT IRRITANT
- SKIN CONTACT NOT IRRITANT TO INTACT SKIN. SLIGHTLY IRRITANT ON PROLONGED CONTACT TO ABRADED SKIN.
- INHALATION MAY CAUSE IRRITATION TO MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.
- INGESTION MAY CAUSE FALLING ASLEEP, MUSCULAR INCOORDINATION AND RESPIRATORY DEPRESSION.

ABDOMINAL PAIN, NAUSEA AND VOMITING.

4. FIRST-AID MEASURES

EYE CONTACT HOLDING THE EYELIDS APART, FLUSH EYES PROMPTLY WITH COPIOUS FLOWING WATER FOR AT LEAST 20 MINUTES.

GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT REMOVE CONTAMINATED CLOTHING. WASH SKIN THOROUGHLY WITH MILD SOAP AND PLENTY OF WATER FOR AT LEAST 15 MINUTES. WASH CLOTHING BEFORE RE-USE.

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GET MEDICAL ATTENTION IF IRRITATION OCCURS.

INHALATION IN CASE OF DUST INHALATION OR BREATHING FUMES RELEASED FROM HEATED MATERIAL, REMOVE PERSON TO FRESH AIR.

KEEP HIM QUIET AND WARM. APPLY ARTIFICIAL RESPIRATION IF NECESSARY AND GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION IF SWALLOWED, WASH MOUTH THOROUGHLY WITH PLENTY OF WATER AND GIVE WATER TO DRINK.

GET MEDICAL ATTENTION IMMEDIATELY.

NOTE: NEVER GIVE AN UNCONSCIOUS PERSON ANYTHING TO DRINK.

NOTES TO THE PHYSICIAN IN CASE OF INGESTION INDUCE VOMITING IN ALERT PATIENT. NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

5 FIRE-FIGHTING MEASURES

FLASH POINT NONE

FLAMMABLE/EXPLOSION LIMITS NOT FLAMMABLE

AUTO-IGNITION TEMPERATURE NOT APPLICABLE

SUITABLE EXTINGUISHING MEDIA MATERIAL IS NOT COMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE TO SURROUNDING FIRE CONDITIONS.

FIRE FIGHTING PROCEDURE

COOL CONTAINERS WITH WATER SPRAY. IN CLOSED STORES, PROVIDE FIRE-FIGHTERS WITH SELF-CONTAINED BREATHING APPARATUS IN POSITIVE PRESSURE MODE.

UNUSUAL FIRE AND EXPLOSION

HAZARDS WILL DECOMPOSE FROM CA. 800 C RELEASING POISONOUS AND CORROSIVE FUMES OF HBR.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS WEAR RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER GLOVES AND BOOTS.

METHODS FOR CLEANING UP SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL OR POSSIBLE RE-USE.

AVOID RAISING DUST.

VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

7. HANDLING AND STORAGE

PRODUCT: POTASSIUM BROMIDE

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HANDLING AVOID BODILY CONTACT.
KEEP CONTAINERS TIGHTLY CLOSED.
STORAGE HYGROSCOPIC. AVOID EXPOSURE TO MOISTURE.
STORE IN A DRY, COOL, WELL-VENTILATED AREA AWAY FROM INCOMPATIBLE MATERIALS
(SEE "MATERIALS TO AVOID").

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

VENTILATION REQUIREMENTS MECHANICAL EXHAUST REQUIRED.
VENTILATION MUST BE SUFFICIENT TO MAINTAIN TLV-TWA BELOW 10 MG/M3 (ACGIH
RECOMMENDATION FOR PARTICULATES (INSOLUBLE) NOT OTHERWISE SPECIFIED (PNOS)).

PERSONAL PROTECTIVE EQUIPMENT:

- RESPIRATORY PROTECTION DUST RESPIRATOR
- HAND PROTECTION PVC GLOVES RUBBER GLOVES
- EYE PROTECTION CHEMICAL SAFETY GOGGLES
- SKIN AND BODY PROTECTION BODY COVERING CLOTHES AND BOOTS

HYGIENE MEASURES SAFETY SHOWER AND EYE BATH SHOULD BE PROVIDED. DO NOT EAT,
DRINK OR SMOKE UNTIL AFTER-WORK SHOWERING AND CHANGING CLOTHES.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	WHITE, ODOURLESS, CRYSTALLINE SOLID
MELTING POINT/RANGE	734 C
BOILING POINT/RANGE	1435 C
VAPOUR PRESSURE	1 MM HG AT 795 C
VAPOR DENSITY	NOT APPLICABLE UNDER STANDARD CONDITIONS
EVAPORATION RATE (ETHER=1)	NOT APPLICABLE UNDER STANDARD CONDITIONS

SOLUBILITY:

- SOLUBILITY IN WATER 65.5 G/100ML AT 20 C
102 GR/100ML AT 100 C
- SOLUBILITY IN OTHER SOLVENTS ALCOHOL: 0.142 G/1 00G AT 25 C

SPECIFIC GRAVITY 2.75
DECOMPOSITION TEMPERATURE FROM CA. 800 C

10. STABILITY AND REACTIVITY

STABILITY HYGROSCOPIC.
STABLE UNDER NORMAL CONDITIONS
MATERIALS TO AVOID STRONG OXIDANTS
STRONG ACIDS
HEAVY METAL SALTS
REACTS EXPLOSIVELY WITH BROMINE TRIFLUORIDE
CONDITIONS TO AVOID EXPOSURE TO MOISTURE
HEATING ABOVE DECOMPOSITION TEMPERATURE

PRODUCT: POTASSIUM BROMIDE

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HAZARDOUS DECOMPOSITION
PRODUCTS HBR
HAZARDOUS POLYMERIZATION WILL NOT OCCUR

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

- RAT ORAL LD50 > 5000 MG/KG
- EYE IRRITATION (RABBIT) IRRITANT
- DERMAL IRRITATION (RABBIT) NOT IRRITANT

CHRONIC TOXICITY REPEATED SKIN CONTACT MAY CAUSE DERMATITIS.
REPEATED ORAL INTAKE OF BROMIDES (>9 MG/KG BODY WEIGHT/DAY) MAY AFFECT THE CENTRAL NERVOUS SYSTEM. WARNING SYMPTOMS INCLUDE MENTAL DULLNESS, SLURRED SPEECH, WEAKENED MEMORY, APATHY, ANOREXIA, CONSTIPATION, DROWSINESS AND LOSS OF SENSITIVITY TO TOUCH AND PAIN.

MUTAGENICITY NOT MUTAGENIC BY THE AMES TEST

CARCINOGENICITY NOT KNOWN TO BE A CARCINOGEN.
NOT CLASSIFIED BY IARC.
NOT INCLUDED IN NTP 9TH REPORT ON CARCINOGENS.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE KBR IS AN INORGANIC SALT, WHICH FULLY DISSOCIATES IN AQUATIC ENVIRONMENT TO BROMIDE AND POTASSIUM IONS. IT ALSO UNDERGOES DEGRADATION IN SOIL TO BROMIDE ION (NO FURTHER DEGRADATION OR BIODEGRADATION WILL OCCUR).

AQUATIC TOXICITY:

- LC50, FISH 3200 MG/L, 5 DAYS (RAINBOW TROUT)
- 48 HOUR-EC50, DAPHNIA MAGNA >100 MG/L

AVIAN TOXICITY:

- ORAL LD50, BOBWHITE QUAIL >2500 MG/KG
- DIETARY LC50, BOBWHITE QUAIL 6000 PPM

BIOACCUMULATIVE POTENTIAL BIOACCUMULATION IS NOT LIKELY TO OCCUR SINCE THIS MATERIAL IS HIGHLY SOLUBLE IN WATER.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL ADD INTO A LARGE VESSEL CONTAINING WATER AND DRAIN INTO SEWER WITH AMPLE WATER. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS WHEN DISPOSING OF THIS MATERIAL.

PRODUCT: POTASSIUM BROMIDE

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14. TRANSPORTATION INFORMATION

DOT NOT REGULATED
IMO NOT REGULATED
ICAO/IATA NOT REGULATED

15. REGULATORY INFORMATION

USA REPORTED IN THE EPA TSCA INVENTORY

CANADA LISTED IN DSL

EEC NO. 231-830-3

JAPAN LISTED IN MITI (1-108)

AUSTRALIA LISTED IN AICS

CHINA INVENTORY LISTED

SOUTH KOREA LISTED IN ECL (KE-29079)

SWITZERLAND GIFTKLASSE 3

PHILIPPINES LISTED IN PICCS

16. OTHER INFORMATION

THIS DATA SHEET CONTAINS CHANGES FROM THE PREVIOUS VERSION IN SECTION(S)
8,15

THE HSE POLICY OF DEAD SEA BROMINE GROUP

DEAD SEA BROMINE GROUP (DSBG) IS THE WORLD'S LARGEST PRODUCER OF ELEMENTAL
BROMINE AND A RECOGNIZED LEADER IN THE DEVELOPMENT AND SUPPLY OF BROMINE
COMPOUNDS.

DSBG IS COMMITTED TO RESPONSIBLY MANAGE ITS PRODUCTS AT ALL STAGES OF THEIR
LIFE CYCLE IN ORDER TO PROTECT HUMAN HEALTH AND THE ENVIRONMENT.
THIS RESPONSIBILITY APPLIES THROUGHOUT DEVELOPMENT, MANUFACTURE,
TRANSPORTATION, USE, RECYCLE AND DISPOSAL OF DSBG PRODUCTS.

WITHIN THIS FRAMEWORK DSBG IS COMMITTED TO:

- * COMPLY WITH NATIONAL AND INTERNATIONAL REGULATORY REQUIREMENTS
- * CONFORM TO THE ISO 14001 AND OHSAS 18001 REQUIREMENTS FOR ENVIRONMENTAL AND OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEMS AND PERIODICALLY EVALUATE PERFORMANCE AS PART OF THE COMPANY'S EXISTING QUALITY AUDITS SYSTEM
- * DESIGN PRODUCTS AND PROCESSES WHICH PREVENT RISK TO HEALTH AND THE ENVIRONMENT AT PRODUCTION SITES AND ALONG THE SUPPLY CHAIN
- * IMPROVE EFFICIENCY IN USE OF ENERGY & NATURAL RESOURCES, PROMOTE RECYCLING AND WASTE MANAGEMENT THROUGH SAFE & ENVIRONMENTALLY SOUND END OF LIFE

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PROGRAMS

- * WORK FOR CONTINUAL IMPROVEMENT IN HSE PERFORMANCE
- * REGULARLY ASSESS AND RESPONSIBLY MANAGE HEALTH, SAFETY AND ENVIRONMENTAL RISKS ASSOCIATED WITH PRODUCTS AND PROCESSES
- * EDUCATE AND TRAIN ALL MANAGERS AND EMPLOYEES TO IMPROVE THEIR HSE PERFORMANCE
- * DISTRIBUTE UPDATED INFORMATION CONCERNING ITS POLICY AND PRODUCTS TO ITS WORKERS, CUSTOMERS AND OTHER INTERESTED PARTIES THROUGH MATERIAL SAFETY DATA SHEET (MSDS), WORKERS' SAFETY SHEETS AND THROUGH THE DSBG INTERNET SITE
- * DEVELOP BUSINESS RELATIONSHIPS WITH RESPONSIBLE SUPPLIERS, TRANSPORTERS AND DISTRIBUTORS AND PROVIDE THEM WITH HSE SUPPORT, INFORMATION AND TRAINING
- * SUPPORT PRODUCT STEWARDSHIP PROGRAMS IN COOPERATION WITH CUSTOMERS, DISTRIBUTORS AND TRANSPORTERS
- * ALLOCATE THE NECESSARY RESOURCES FOR IMPLEMENTATION OF THIS POLICY

PREPARED BY HSE DIVISION IN ISRAEL

TELEPHONE: +/972-8-6297830

TELEFAX: +/972-8-6297832

WWW.DSBG.COM

END OF SAFETY DATA SHEET

REPORT NUMBER: 703

UNIVAR USA INC.

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MAINFRAME UPLOAD DATE: 07/16/04

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ORDER NO: 226085

PROD NO : 614395

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

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

10/28/04 08:52 PRODUCT: 614395 CUST NO: 113365 ORDER NO: 226085

----- NOTICE -----

***** UNIVAR USA INC("UNIVAR"), EXPRESSLY DISCLAIMS

ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A

PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED

HEREIN, AND SHALL UNDER NO CIRCUMSTANCES BE LIABLE FOR INCIDENTAL OR

CONSEQUENTIAL DAMAGES. **

DO NOT USE INGREDIENT INFORMATION AND/OR PERCENTAGES IN THIS MSDS AS A
PRODUCT SPECIFICATION. FOR PRODUCT SPECIFICATION INFORMATION REFER TO A PRODUCT
SPECIFICATION SHEET AND/OR A CERTIFICATE OF ANALYSIS. THESE CAN BE OBTAINED FROM
YOUR LOCAL UNIVAR SALES OFFICE.

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DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY
ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM
THE PUBLICATION OR USE OF, OR RELIANCE UPON , INFORMATION CONTAINED HEREIN.
THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT
RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER
PROCESS.

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



Gardena, CA

Material Safety Data Sheet

NFPA	HMIS		Personal Protective Equipment
	Health Hazard	(3)	See Section 15.
	Fire Hazard	(0)	
	Reactivity	(2)	

Section 1. Chemical Product and Company Identification			
Common Name/ Trade Name	Sodium hydroxide	Code	S4100
		CAS#	1310-73-2
Manufacturer	SPECTRUM CHEMICAL MFG. CORP. 14422 SOUTH SAN PEDRO STREET GARDENA, CALIFORNIA 90248-9985	RTECS	WB4900000
		TSCA	On the TSCA list.
Commercial Name(s)	Not available	CI#	Not available.
Synonym	Not available.	<u>In case of emergency</u>	
Chemical Name	Sodium Hydroxide	CHEMTREC (24hr) 800-424-9300	
Chemical Family	Not available.	Emergency phone: (310) 516-8000	
Chemical Formula	NaOH		
Supplier	SPECTRUM QUALITY PRODUCTS 14422 S. SAN PEDRO STREET GARDENA, CA 90248-9985		

Section 2. Composition and Information on Ingredients					
			<i>Exposure Limits</i>		
Name	CAS#	TWA (mg/m3)	STEL (mg/m3)	CEIL (mg/m3)	% by Weight
Sodium hydroxide	1310-73-2				100
Toxicological Data on Ingredients Sodium hydroxide:					

Section 3. Hazards Identification	
Potential Acute Health Effects	Extremely dangerous in case of skin contact (corrosive, irritant), of eye contact (irritant), of ingestion. Very dangerous in case of inhalation. Very slightly to slightly dangerous in case of skin contact (permeator). Corrosive to eyes and skin. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. 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	CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. The substance is toxic to lungs, mucous membranes. Toxicity of the

Health Effects

product to the reproductive system: Not available. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

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: Neutralize exposed skin with a dilute solution of boric acid or acetic acid. 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. 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 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	DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Seek immediate medical attention.
Hazardous Ingestion	DO NOT induce vomiting. 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. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Section 5. Fire and Explosion Data

Flammability of the Product	Non-flammable.
Auto-Ignition Temperature	Not applicable.
Flash Points	Not applicable.
Flammable Limits	Not applicable.

Products of Combustion	Not applicable.
Fire Hazards in Presence of Various Substances	Not applicable.
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	Non-flammable.
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. If necessary: Neutralize the residue with a dilute solution of acetic acid.
Large Spill	Corrosive 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. Call for assistance on disposal. Neutralize the residue with a dilute solution of acetic acid.

Section 7. Handling and Storage

Precautions	Keep container dry. DO NOT breathe dust. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles as moisture.
Storage	Corrosive materials should be stored in a separate safety storage cabinet or room.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering 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. Synthetic apron. Vapor and dust respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Gloves (impervious). Wear appropriate respirator when ventilation is inadequate.
	Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing

Personal Protection in Case of a Large Spill

apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits

CEIL: 2 (mg/m) from ACGIH [1995] Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid.	Odor	Not available.
Molecular Weight	40	Taste	Not available.
pH (1% soln/water)	14	Color	Not available.
Boiling Point	1390.C (2534.F)		
Melting Point	318.4.C (605.1.F)		
Critical Temperature	Not available.		
Specific Gravity	2.13 (Water = 1)		
Vapor Pressure	0 mm of Hg (@ 20.C)		
Vapor Density	Not available.		
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	Easily soluble in cold water.]		

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	Highly reactive with moisture.
Corrosivity	Very slightly to slightly 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. Inhalation.
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**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. Very dangerous in case of inhalation. Very slightly to slightly dangerous in case of skin contact (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**

Some metallic oxides.

**Toxicity of the
Products of
Biodegradation**

The products of degradation are as toxic as the original product.

**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 8: Corrosive solid.

Identification

Sodium hydroxide, solid UN1823 II

**Special Provisions
for Transport**

No additional remark.

DOT (Pictograms)

Section 15. Other Regulatory Information and 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:

NONE

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)

DSCL (EEC)

Other Classifications

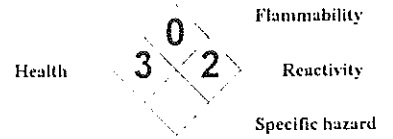
WHMIS (Canada)

DSCL (EEC)

HMIS (U.S.A.)

Health Hazard	(3)
Fire Hazard	(0)
Reactivity	(1)
Personal Protection	()

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



Personal Protective Equipment

Protective Gloves (impervious).

Synthetic apron.

Vapor and 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) S1295, S1300, S1301, S1302, S1303, S1305, S1308, SO170

Other Special Considerations No additional remark.

Validated by E. Brull on 12/17/96.

Verified by ~~E. Brull~~
Name

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.