

# PHOTOGRAPHERS' FORMULARY

## FORMULARY FILM DEVELOPER 50

### CATALOG NUMBER 01-0110 TO MAKE 1 LITER

Formulary Film Developer 50 is a moderately fast developer for commercial and sheet sizes of Plus-x, Pan professional films. The developer produces negatives with normal contrast, average to slightly higher than average graininess. May use with or without dilution.

Undiluted developer can process 5- 8X10's per 1 liter of Formulary 50 without replenishment. Diluted developer 1:1 can process 10- 8X10's per liter.

The chemicals in this kit are used to make a working solution with a shelf life of 6 months, in a full-capped container. A 2-month shelf can be expected on a half full container.

#### CHEMICALS CONTAINED IN THIS KIT

Chemical	1 Liter
Metol	2.5 Grams
Sodium Sulfit	30 Grams
Hydroquinone	2.5 Grams
Sodium Metaborate	10 Grams
Potassium Bromide	.5 Grams

#### FOR YOUR CHEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. Please read the warning label on each chemical package.

Only one chemical used in the kit, metol, needs special attention. Some individuals become sensitized to metol. If this should occur, discontinue use and see a physician.

The user assumes all risks upon accepting these chemicals. IF FOR ANY REASON YOU DO NOT WANT TO ASSUME ALL RISKS, PLEASE RETURN THE CHEMICALS 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 DEVELOPER WORKING SOLUTION

You will need a brown bottle with a capacity of one liter, and a mixing container.

We recommend you wear rubber gloves, splash goggles, dust mask and a vinyl apron whenever mixing dry chemicals.



10-0710

## MATERIAL SAFETY DATA SHEET (M. S. D. S.)

### SECTION – I, CHEMICAL IDENTIFICATION

NAME OF PRODUCT : METOL (p-METHYL AMINOPHENOL SULPHATE)

CHEMICAL FORMULA :  $\text{HOC}_6\text{H}_4\text{NHCH}_3 \frac{1}{2} \text{H}_2\text{SO}_4$

CAS NO. : 55-55-0

### SECTION – II, HAZARDS IDENTIFICATION

- TOXIC BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
- IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.
- IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).
- IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.
- WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.

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### SECTION – III, FIRST-AID MEASURES

- IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY AMOUNTS OF WATER FOR AT LEAST 15 MINUTES.
- IN CASE OF CONTACT, IMMEDIATELY WASH SKIN WITH SOAP AND COPIOUS AMOUNTS OF WATER.
- IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
- IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN.
- WASH CONTAMINATED CLOTHING BEFORE REUSE.

### SECTION – IV, FIRE FIGHTING MEASURES

- EXTINGUISHING MEDIA  
WATER SPRAY.  
CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.
- SPECIAL FIREFIGHTING PROCEDURES  
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.
- UNUSUAL FIRE AND EXPLOSIONS HAZARDS  
EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

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### SECTION – V, ACCIDENTAL RELEASE MEASURES

- WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY RUBBER GLOVES.
- SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL.
- VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

### SECTION – VI, SAFE HANDLING / PERSONAL PROTECTION

- WEAR APPROPRIATE RESPIRATOR, CHEMICAL-RESISTANT GLOVES, SAFETY GOGGLES.
- SAFETY SHOWER AND EYE BATH.
- USE ONLY IN A CHEMICAL FUME HOOD.
- DO NOT BREATHE DUST.
- AVOID CONTACT WITH EYES, SKIN AND CLOTHING.
- AVOID PROLONGED OR REPEATED EXPOSURE.
- WASH THOROUGHLY AFTER HANDLING.
- TOXIC.
- IRRITANT.
- POSSIBLE SENSITIZER.
- KEEP TIGHTLY CLOSED.
- PROTECT FROM LIGHT.

### SECTION – VII, PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR : WHITE CRYSTALS, ODORLESS  
PHYSICAL PROPERTIES  
MELTING POINT : 260<sup>0</sup> C (DEC)  
AUTOIGNITION TEMPERATURE : 531<sup>0</sup> C

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## SECTION –VIII, STABILITY AND REACTIVITY

- INCOMPATIBILITIES
  - ACIDS
  - ACIDS CHLORIDES
  - ACID ANHYDRIDES
  - OXIDIZING AGENTS
  - SENSITIVE TO LIGHT
- HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS

THERMAL DECOMPOSITION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE, AND NITROGEN OXIDES.  
SULFUR OXIDES.

## SECTION –IX, TOXICOLOGICAL INFORMATION

### ACUTE EFFECTS

- HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.
- CAUSES EYE AND SKIN IRRITATION.
- MATERIAL IS IRRITATING TO MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.
- PROLONGED OR REPEATED EXPOSURE MAY CAUSE ALLERGIC REACTIONS IN CERTAIN SENSITIVE INDIVIDUALS.
- TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

## SECTION –X, OTHER INFORMATION

The information submitted is based on our current knowledge and experience. In view of the many factors that may affect processing and application, these data do not relieve processor from the responsibility of carrying out their own tests and experiments, neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.

**THATCHER COMPANY MATERIAL SAFETY DATA SHEET****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:** Na<sub>2</sub>SO<sub>3</sub> + 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 <sup>3</sup> *
Cobalt Sulfate (as Co)	10124-43-3		TLV = 0.05 mg/m <sup>3</sup> * PEL = 0.1 mg/m <sup>3</sup>

\*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:**



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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THATCHER COMPANY MATERIAL SAFETY DATA SHEET

PRODUCT: SODIUM SULFITE, CATALYZED

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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.

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

Section 2. Composition and Information on Ingredients					
Name	CAS #	Exposure Limits			% by Weight
		TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )	CEIL (mg/m <sup>3</sup> )	
1) Hydroquinone	123-31-9	2			100
Toxicological Data on Ingredients	<b>Hydroquinone:</b> 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	<b>CARCINOGENIC EFFECTS:</b> Not available. <b>MUTAGENIC EFFECTS:</b> Not available. <b>TERATOGENIC EFFECTS:</b> Not available. <b>DEVELOPMENTAL TOXICITY:</b> 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 <sub>2</sub> ).
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 <sup>3</sup> )
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.*



10-12-85  
002 12/24/03 SODIUM METABORATE 8 MOL

PRODUCT NAME:  
SODIUM METABORATE 8 MOL

MSDS #: BXSM8

MATERIAL SAFETY DATA SHEET  
DATE OF ISSUE DECEMBER 2003  
SUPERSEDES MAY 2000 VERSION  
SODIUM METABORATE 8 MOL

### 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: SODIUM METABORATE 8 MOL

GRADE: TECHNICAL

PRODUCT USE: INDUSTRIAL MANUFACTURING

CHEMICAL FORMULA:  $\text{NaBO}_2 \cdot 4\text{H}_2\text{O}$   
[ $\text{Na}_2\text{B}_2\text{O}_4 \cdot 8\text{H}_2\text{O}$ ]

CHEMICAL NAME/SYNONYMS: SODIUM METABORATE TETRAHYDRATE

CHEMICAL FAMILY: INORGANIC BORATES

CAS REGISTRY NUMBER: 10555-76-7  
(REFER TO SECTION 15 FOR TSCA/DSL CHEMICAL INVENTORY LISTING)

MANUFACTURER:

U.S. BORAX INC.  
26877 TOURNEY ROAD  
VALENCIA, CA 91355-1847

EMERGENCY PHONE NUMBERS  
24 HR. MEDICAL INFO. SERVICE: (661) 284-5200  
CHEMTREC (SPILLS): (800) 424-9300

### 2 COMPOSITION/INFORMATION ON INGREDIENTS

THIS PRODUCT CONTAINS GREATER THAN 99 PERCENT (%) SODIUM METABORATE TETRAHYDRATE,  $\text{NaBO}_2 \cdot 4\text{H}_2\text{O}$ , WHICH IS HAZARDOUS UNDER THE OSHA HAZARD COMMUNICATION STANDARD AND UNDER THE CANADIAN CONTROLLED PRODUCTS REGULATIONS OF THE HAZARDOUS PRODUCTS ACT (WHMIS), BASED ON ANIMAL CHRONIC TOXICITY STUDIES. REFER TO SECTIONS 3 AND 11 FOR DETAILS ON HAZARDS.

### 3 HAZARD IDENTIFICATION

#### EMERGENCY OVERVIEW

SODIUM METABORATE 8 MOL IS A WHITE, ODORLESS, POWDERED SUBSTANCE THAT IS NOT FLAMMABLE, COMBUSTIBLE, OR EXPLOSIVE. AQUEOUS SOLUTIONS OF SODIUM METABORATE 8 MOL MAY BE STRONGLY ALKALINE. SODIUM METABORATE 8 MOL HAS A LOW ACUTE ORAL TOXICITY, BUT MAY RESULT IN DERMAL OR EYE IRRITATION DUE TO ALKALINITY.

#### POTENTIAL ECOLOGICAL EFFECTS

LARGE AMOUNTS OF SODIUM METABORATE 8 MOL CAN BE HARMFUL TO PLANTS AND OTHER SPECIES. THEREFORE, RELEASES TO THE ENVIRONMENT SHOULD BE MINIMIZED.

#### POTENTIAL HEALTH EFFECTS

ROUTES OF EXPOSURE: INHALATION IS THE MOST SIGNIFICANT ROUTE OF EXPOSURE IN OCCUPATIONAL AND OTHER SETTINGS. DERMAL EXPOSURE MAY BE A CONCERN BECAUSE OF SKIN IRRITATION FROM SODIUM METABORATE 8 MOL.

INHALATION: INHALATION IS LIKELY TO PRODUCE IRRITATION BECAUSE OF ITS ALKALINITY. AIRBORNE DUST CONCENTRATION SHOULD BE MAINTAINED BELOW 10 MG/M3.

EYE CONTACT: SODIUM METABORATE 8 MOL MAY CAUSE EYE DAMAGE. AVOID CONTACT WITH EYES. AQUEOUS SOLUTIONS OF SODIUM METABORATE 8 MOL MAY BE IRRITATING TO EYES UPON PROLONGED OR REPEATED CONTACT. ADEQUATE EYE PROTECTION SHOULD BE WORN.

SKIN CONTACT: SODIUM METABORATE 8 MOL MAY BE IRRITATING TO INTACT SKIN. REPEATED SKIN EXPOSURE SHOULD BE AVOIDED.

INGESTION: PRODUCTS CONTAINING SODIUM METABORATE 8 MOL ARE NOT INTENDED FOR INGESTION. SODIUM METABORATE 8 MOL HAS A LOW ACUTE TOXICITY. SMALL AMOUNTS (E.G., A TEASPOONFUL) SWALLOWED ACCIDENTALLY ARE NOT LIKELY TO CAUSE EFFECTS; SWALLOWING AMOUNTS LARGER THAN THAT MAY CAUSE GASTROINTESTINAL SYMPTOMS.

CANCER: SODIUM METABORATE 8 MOL IS NOT A KNOWN CARCINOGEN.

REPRODUCTIVE/DEVELOPMENTAL: ANIMAL INGESTION STUDIES IN SEVERAL SPECIES, AT HIGH DOSES, INDICATE THAT BORATES CAUSE REPRODUCTIVE AND DEVELOPMENTAL EFFECTS. A HUMAN STUDY OF OCCUPATIONAL EXPOSURE TO BORATE DUST SHOWED NO ADVERSE EFFECT ON REPRODUCTION.

TARGET ORGANS: NO TARGET ORGAN HAS BEEN IDENTIFIED IN HUMANS. HIGH DOSE ANIMAL INGESTION STUDIES INDICATE THE TESTES ARE THE TARGET ORGANS IN MALE ANIMALS.

SIGNS AND SYMPTOMS OF EXPOSURE: SYMPTOMS OF ACCIDENTAL OVER-EXPOSURE TO SODIUM METABORATE 8 MOL MIGHT INCLUDE NAUSEA, VOMITING AND DIARRHEA, WITH DELAYED EFFECTS OF SKIN REDNESS AND PEELING. THESE SYMPTOMS HAVE BEEN ASSOCIATED WITH THE ACCIDENTAL OVER-EXPOSURE TO THE RELATED SUBSTANCE BORIC ACID.

REFER TO SECTION 11 FOR DETAILS ON TOXICOLOGICAL DATA.

#### 4 FIRST AID MEASURES

INHALATION: IF SYMPTOMS SUCH AS NOSE OR THROAT IRRITATION ARE OBSERVED, REMOVE PERSON TO FRESH AIR.

EYE CONTACT: BECAUSE OF ITS ALKALINITY, GREATER ATTENTION SHOULD BE GIVEN TO ADEQUATE EYE IRRIGATION. SEEK MEDICAL ATTENTION.

SKIN CONTACT: FLUSH SKIN WITH WATER. REMOVE CONTAMINATED CLOTHING. SEEK MEDICAL ATTENTION IF IRRITATION PERSISTS.

INGESTION: BECAUSE OF ITS ALKALINITY, SUPERFICIAL EFFECTS OF THE MOUTH AND ESOPHAGUS SHOULD BE MONITORED. IF IRRITATION IS NOTED, THEN SEEK MEDICAL ATTENTION.

NOTE TO PHYSICIANS: TREAT AS A MODERATELY STRONG ALKALI EXPOSURE. IN ADDITION, FOR INGESTION OF LARGE AMOUNTS (GREATER THAN 8 GRAMS), MAINTAIN ADEQUATE KIDNEY FUNCTION AND FORCE FLUIDS. GASTRIC LAVAGE IS RECOMMENDED FOR SYMPTOMATIC PATIENTS ONLY. HEMODIALYSIS SHOULD BE RESERVED FOR MASSIVE ACUTE INGESTION OR PATIENTS WITH RENAL FAILURE. BORON ANALYSES OF URINE OR BLOOD ARE ONLY USEFUL FOR DOCUMENTING EXPOSURE AND SHOULD NOT BE USED TO EVALUATE SEVERITY OF POISONING OR TO GUIDE TREATMENT<sup>1</sup>. REFER TO SECTION 11 FOR DETAILS.

#### 5 FIRE FIGHTING MEASURES

GENERAL HAZARD: NONE, BECAUSE SODIUM METABORATE 8 MOL IS NOT FLAMMABLE, COMBUSTIBLE OR EXPLOSIVE. THE PRODUCT IS ITSELF A FLAME RETARDANT.

EXTINGUISHING MEDIA: ANY FIRE EXTINGUISHING MEDIA MAY BE USED ON NEARBY FIRES.

FLAMMABILITY CLASSIFICATION (29 CFR 1910.1200): NON-FLAMMABLE SOLID.

#### 6 ACCIDENTAL RELEASE MEASURES

GENERAL: SODIUM METABORATE 8 MOL IS A WATER-SOLUBLE, WHITE POWDER THAT MAY, AT HIGH CONCENTRATIONS, CAUSE DAMAGE TO TREES

OR VEGETATION BY ROOT ABSORPTION. (REFER TO ECOLOGICAL INFORMATION, SECTION 12, FOR SPECIFIC INFORMATION.)

LAND SPILL: VACUUM, SHOVEL OR SWEEP UP SODIUM METABORATE 8 MOL AND PLACE IN CONTAINERS FOR DISPOSAL IN ACCORDANCE WITH APPLICABLE LOCAL REGULATIONS. AVOID CONTAMINATION OF WATER BODIES DURING CLEANUP AND DISPOSAL. PROTECTIVE CLOTHING, WATERPROOF GLOVES AND EYE PROTECTION SHOULD BE WORN WHEN CLEANING UP LAND SPILLS.

SPILLAGE INTO WATER: WHERE POSSIBLE, REMOVE ANY INTACT CONTAINERS FROM THE WATER. ADVISE LOCAL WATER AUTHORITY THAT NONE OF THE AFFECTED WATER SHOULD BE USED FOR IRRIGATION OR FOR THE ABSTRACTION OF POTABLE WATER UNTIL NATURAL DILUTION RETURNS THE BORON VALUE TO ITS NORMAL ENVIRONMENTAL BACKGROUND LEVEL. (REFER TO SECTIONS 12, 13 AND 15 FOR ADDITIONAL INFORMATION.) SODIUM METABORATE 8 MOL IS A NON-HAZARDOUS WASTE WHEN SPILLED OR DISPOSED OF, AS DEFINED IN THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) REGULATIONS (40 CFR 261). (REFER TO REGULATORY INFORMATION, SECTION 15, FOR ADDITIONAL REFERENCES.)

## 7 HANDLING AND STORAGE

GENERAL: PROTECTIVE CLOTHING, WATERPROOF GLOVES AND EYE PROTECTION SHOULD BE WORN WHEN HANDLING SODIUM METABORATE 8 MOL. BUT DRY, INDOOR STORAGE IS RECOMMENDED. TO MAINTAIN PACKAGE INTEGRITY AND TO MINIMIZE CAKING OF THE PRODUCT, BAGS SHOULD BE HANDLED ON A FIRST-IN, FIRST-OUT BASIS. GOOD HOUSEKEEPING PROCEDURES SHOULD BE FOLLOWED TO MINIMIZE DUST GENERATION AND ACCUMULATION.

STORAGE TEMPERATURE: AMBIENT

STORAGE PRESSURE: ATMOSPHERIC

SPECIAL SENSITIVITY: MOISTURE (CAKING)

## 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: USE LOCAL EXHAUST VENTILATION TO KEEP AIRBORNE CONCENTRATIONS OF SODIUM METABORATE 8 MOL DUST BELOW PERMISSIBLE EXPOSURE LEVELS.

PERSONAL PROTECTION: PROTECTIVE CLOTHING, EYE GOGGLES AND GLOVES ARE RECOMMENDED FOR NORMAL INDUSTRIAL EXPOSURES. WHERE AIRBORNE CONCENTRATIONS ARE EXPECTED TO EXCEED EXPOSURE LIMITS, NIOSH/MSHA CERTIFIED RESPIRATORS SHOULD BE USED.

OCCUPATIONAL EXPOSURE LIMITS: SODIUM METABORATE TETRAHYDRATE (SODIUM METABORATE 8 MOL) IS TREATED BY OSHA, CAL OSHA AND ACGIH AS "PARTICULATE NOT OTHERWISE CLASSIFIED" OR NUISANCE DUST. THE OSHA/PEL (PERMISSIBLE EXPOSURE LEVEL) IS 15 MG/M3 TOTAL DUST AND 5 MG/M3 RESPIRABLE DUST. THE CAL OSHA/PEL IS 10 MG/M3. THE ACGIH/TLV (THRESHOLD LIMIT VALUE) IS 10 MG/M3 TOTAL DUST AND 3 MG/M3 RESPIRABLE DUST.

## 9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: WHITE, ODORLESS, CRYSTALLINE SOLID

SPECIFIC GRAVITY: 1.74

VAPOR PRESSURE: NEGLIGIBLE @ 20 C

SOLUBILITY IN WATER: 41.9% @ 20 C; 109.8% @ 100 C

MELTING POINT: 53.5 C (128 F)

PH @ 20 C: 10.5 (0.1% SOLUTION); 11.0 (1.0%

SOLUTION); 11.4 (4.0% SOLUTION)

MOLECULAR WEIGHT: 137.88 (NABO2 4H2O)

## 10 STABILITY AND REACTIVITY

GENERAL: SODIUM METABORATE 8 MOL IS A STABLE PRODUCT.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

SODIUM METABORATE 8 MOL REACTS AS A WEAK ACID WHICH MAY

CAUSE CORROSION OF BASE METALS. REACTION WITH STRONG REDUCING

AGENTS, SUCH AS METAL HYDRIDES OR ALKALI METALS, WILL GENERATE HYDROGEN GAS, WHICH COULD CREATE AN EXPLOSIVE HAZARD.  
HAZARDOUS DECOMPOSITION: NONE.

## 11 TOXICOLOGICAL INFORMATION

### ACUTE TOXICITY

INGESTION: LOW ACUTE ORAL TOXICITY; LD50 IN RATS IS 2330 MG/KG OF BODY WEIGHT.

SKIN/DERMAL: NO EXPERIMENTAL DATA. LD50 IS EXPECTED TO BE GREATER THAN 2,000 MG/KG OF BODY WEIGHT.

INHALATION: NO EXPERIMENTAL DATA. OTHER BORATES INDICATE LOW ACUTE INHALATION TOXICITY. MANY YEARS OF OCCUPATIONAL EXPOSURE TO BORIC ACID AND OTHER BORATES INDICATE NO INCREASE IN PULMONARY DISEASE.

SKIN IRRITATION: PROBABLE SKIN IRRITANT BASED ON CHEMICAL PROPERTIES (ALKALINITY).

EYE IRRITATION: SODIUM METABORATE 8 MOL IS A PROBABLE EYE IRRITANT.

SENSITIZATION: NO EXPERIMENTAL TEST DATA. HOWEVER, OTHER BORATES ARE NOT SKIN SENSITIZERS.

### OTHER

REPRODUCTIVE/DEVELOPMENTAL TOXICITY: ANIMAL FEEDING STUDIES IN RAT, MOUSE AND DOG, AT HIGH DOSES, HAVE DEMONSTRATED EFFECTS ON FERTILITY AND TESTES<sup>2</sup>. STUDIES WITH THE CHEMICALLY RELATED BORIC ACID IN THE RAT, MOUSE AND RABBIT, AT HIGH DOSES, DEMONSTRATE DEVELOPMENTAL EFFECTS ON THE FETUS, INCLUDING FETAL WEIGHT LOSS AND MINOR SKELETAL VARIATIONS<sup>3, 4</sup>. THE DOSES ADMINISTERED WERE MANY TIMES IN EXCESS OF THOSE TO WHICH HUMANS WOULD NORMALLY BE EXPOSED<sup>5</sup>.

CARCINOGENICITY/MUTAGENICITY: BORIC ACID DID NOT PRODUCE ANY EVIDENCE OF CARCINOGENICITY IN MICE<sup>6</sup>, NOR WAS ANY MUTAGENIC ACTIVITY OBSERVED IN A BATTERY OF SHORT-TERM MUTAGENICITY ASSAYS.

HUMAN DATA: HUMAN EPIDEMIOLOGICAL STUDIES SHOW NO INCREASE IN PULMONARY DISEASE IN OCCUPATIONAL POPULATIONS WITH CHRONIC EXPOSURES TO BORIC ACID DUST AND SODIUM BORATE DUST. A RECENT EPIDEMIOLOGY STUDY UNDER THE CONDITIONS OF NORMAL OCCUPATIONAL EXPOSURE TO BORATE DUSTS INDICATED NO EFFECT ON FERTILITY<sup>7</sup>.

## 12 ECOLOGICAL INFORMATION

### ECOTOXICITY DATA

GENERAL: BORON (B) IS THE ELEMENT IN SODIUM METABORATE TETRAHYDRATE (SODIUM METABORATE 8 MOL) WHICH IS USED BY CONVENTION TO REPORT BORATE PRODUCT ECOLOGICAL EFFECTS. IT OCCURS NATURALLY IN SEAWATER AT AN AVERAGE CONCENTRATION OF 5 MG B/L AND GENERALLY OCCURS IN FRESHWATER AT CONCENTRATIONS UP TO 1 MG B/L. IN DILUTE AQUEOUS SOLUTIONS THE PREDOMINANT BORON SPECIES PRESENT IS UNDISSOCIATED BORIC ACID. TO CONVERT SODIUM METABORATE TETRAHYDRATE INTO THE EQUIVALENT BORON (B) CONTENT, MULTIPLY BY 0.0784.

PHYTOTOXICITY: BORON IS AN ESSENTIAL MICRONUTRIENT FOR HEALTHY GROWTH OF PLANTS; HOWEVER, IT CAN BE HARMFUL TO BORON SENSITIVE PLANTS IN HIGHER QUANTITIES. CARE SHOULD BE TAKEN TO MINIMIZE THE AMOUNT OF SODIUM METABORATE 8 MOL RELEASED TO THE ENVIRONMENT.

### ALGAL TOXICITY:

GREEN ALGAE, SCENEDESMUS SUBSPICATUS

96-HR EC10 = 24 MG B/L\*

### INVERTEBRATE TOXICITY<sup>8</sup>:

DAPHNIDS, DAPHNIA MAGNA STRAUS

24-HR EC50 = 242 MG B/L\*

TEST SUBSTANCE: \* SODIUM TETRABORATE

### FISH TOXICITY:

SEAWATER<sup>9</sup>:

DAB, LIMANDA LIMANDA

96-HR LC50 = 74 MG B/L\*

FRESHWATER10:

RAINBOW TROUT, S. GAIRDNERI (EMBRYO-LARVAL STAGE)

24-DAY LC50 = 88 MG B/L\*

32-DAY LC50 = 54 MG B/L\*

GOLDFISH, CARASSIUS AURATUS (EMBRYO-LARVAL STAGE)

7-DAY LC50 = 65 MG B/L\*

3-DAY LC50 = 71 MG B/L\*

ENVIRONMENTAL FATE DATA

PERSISTENCE/DEGRADATION: BORON IS NATURALLY OCCURRING AND

UBIQUITOUS IN THE ENVIRONMENT. SODIUM METABORATE 8 MOL

DECOMPOSES IN THE ENVIRONMENT TO NATURAL BORATE.

OCTANOL/WATER PARTITION COEFFICIENT: NO VALUE. IN AQUEOUS

SOLUTION SODIUM METABORATE TETRAHYDRATE IS CONVERTED

SUBSTANTIALLY INTO UNDISSOCIATED BORIC ACID.

SOIL MOBILITY: SODIUM METABORATE 8 MOL IS SOLUBLE IN WATER

AND IS LEACHABLE THROUGH NORMAL SOIL.

### 13 DISPOSAL CONSIDERATIONS

DISPOSAL GUIDANCE: SMALL QUANTITIES OF SODIUM METABORATE 8 MOL CAN USUALLY BE DISPOSED OF AT LANDFILL SITES. NO SPECIAL DISPOSAL TREATMENT IS REQUIRED, BUT LOCAL AUTHORITIES SHOULD BE CONSULTED ABOUT ANY SPECIFIC LOCAL REQUIREMENTS. TONNAGE QUANTITIES OF PRODUCT ARE NOT RECOMMENDED TO BE SENT TO LANDFILLS. SUCH PRODUCT SHOULD, IF POSSIBLE, BE USED FOR AN APPROPRIATE APPLICATION.

RCRA (40 CFR 261): SODIUM METABORATE 8 MOL IS NOT LISTED UNDER ANY SECTIONS OF THE FEDERAL RESOURCE CONSERVATION AND RECOVERY ACT (RCRA).

NPRI (CANADA): SODIUM METABORATE 8 MOL IS NOT LISTED ON THE CANADIAN NATIONAL POLLUTANT RELEASE INVENTORY.

REFER TO SECTION 15 FOR ADDITIONAL REGULATORY INFORMATION.

### 14 TRANSPORT INFORMATION

DOT HAZARDOUS CLASSIFICATION: SODIUM METABORATE 8 MOL IS NOT REGULATED BY THE U.S. DEPARTMENT OF TRANSPORTATION (DOT) AND IS THEREFORE NOT CONSIDERED A HAZARDOUS MATERIAL/SUBSTANCE.

TDG CANADIAN TRANSPORTATION: SODIUM METABORATE 8 MOL IS NOT REGULATED UNDER TRANSPORTATION OF DANGEROUS GOODS (TDG).

INTERNATIONAL TRANSPORTATION: SODIUM METABORATE 8 MOL HAS NO UN NUMBER, AND IS NOT REGULATED UNDER INTERNATIONAL RAIL, ROAD, WATER OR AIR TRANSPORT REGULATIONS.

### 15 REGULATORY INFORMATION

OSHA/CAL OSHA: THIS MSDS DOCUMENT MEETS THE REQUIREMENTS OF BOTH OSHA (29 CFR 1910.1200) AND CAL OSHA (TITLE 8 CCR 5194 (G)) HAZARD COMMUNICATION STANDARDS. REFER TO SECTION 8 FOR REGULATORY EXPOSURE LIMITS.

WHMIS CLASSIFICATION: SODIUM METABORATE TETRAHYDRATE (SODIUM METABORATE 8 MOL) IS CLASSIFIED AS CLASS D-DIVISION 2A UNDER CANADIAN WHMIS GUIDELINES.

CHEMICAL INVENTORY LISTING: SODIUM METABORATE TETRAHYDRATE (SODIUM METABORATE 8 MOL), 7775-19-1, APPEARS ON SEVERAL CHEMICAL INVENTORY LISTS (INCLUDING THE EPA TSCA INVENTORY, CANADIAN DSL, EUROPEAN EINECS, JAPANESE MITI, AUSTRALIAN AND KOREAN LISTS) UNDER THE CAS NO. REPRESENTING THE ANHYDROUS FORM OF THIS INORGANIC SALT.

U.S. EPA TSCA INVENTORY 7775-19-1

CANADIAN DSL 77775-19-1

EINECS 231-891-6

SOUTH KOREA 9212-856

JAPANESE MITI (1)-69

RCRA: SODIUM METABORATE TETRAHYDRATE IS NOT LISTED AS A HAZARDOUS WASTE UNDER ANY SECTIONS OF THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) OR REGULATIONS (40 CFR 261 ET SEQ).

SUPERFUND: CERCLA/SARA. SODIUM METABORATE TETRAHYDRATE IS NOT LISTED UNDER CERCLA OR ITS 1986 AMENDMENTS, SARA, INCLUDING SUBSTANCES LISTED UNDER SECTION 313 OF SARA, TOXIC CHEMICALS, 42 USC 11023, 40 CFR 372.65, SECTION 302 OF SARA, EXTREMELY HAZARDOUS SUBSTANCES, 42 USC 11002, 40 CFR 355, OR THE CERCLA HAZARDOUS SUBSTANCES LIST, 42 USC 9604, 40 CFR 302.

SAFE DRINKING WATER ACT (SDWA): SODIUM METABORATE TETRAHYDRATE IS NOT REGULATED UNDER THE SDWA, 42 USC 300G-1, 40 CFR 141 ET SEQ. CONSULT STATE AND LOCAL REGULATIONS FOR POSSIBLE WATER QUALITY ADVISORIES REGARDING BORON COMPOUNDS. CLEAN WATER ACT (CWA) (FEDERAL WATER POLLUTION CONTROL ACT): 33 USC 1251 ET SEQ.

A) SODIUM METABORATE TETRAHYDRATE (SODIUM METABORATE 8 MOL) IS NOT ITSELF A DISCHARGE COVERED BY ANY WATER QUALITY CRITERIA OF SECTION 304 OF THE CWA, 33 USC 1314.

B) IT IS NOT ON THE SECTION 307 LIST OF PRIORITY POLLUTANTS, 33 USC 1317, 40 CFR 129.

C) IT IS NOT ON THE SECTION 311 LIST OF HAZARDOUS SUBSTANCES, 33 USC 1321, 40 CFR 116.

CANADIAN DRINKING WATER GUIDELINE: AN "INTERIM MAXIMUM ACCEPTABLE CONCENTRATION" (IMAC) FOR BORON IS CURRENTLY SET AT 5 MG B/L.

IARC: THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) (A UNIT OF THE WORLD HEALTH ORGANIZATION) DOES NOT LIST OR CATEGORIZE SODIUM METABORATE TETRAHYDRATE AS A CARCINOGEN.

NTP BIENNIAL REPORT ON CARCINOGENS: SODIUM METABORATE TETRAHYDRATE IS NOT LISTED.

OSHA CARCINOGEN: SODIUM METABORATE TETRAHYDRATE IS NOT LISTED.

CALIFORNIA PROPOSITION 65: SODIUM METABORATE TETRAHYDRATE (SODIUM METABORATE 8 MOL) IS NOT LISTED ON THE PROPOSITION 65 LIST OF CARCINOGENS OR REPRODUCTIVE TOXICANTS.

CLEAN AIR ACT (MONTREAL PROTOCOL): SODIUM METABORATE 8 MOL WAS NOT MANUFACTURED WITH AND DOES NOT CONTAIN ANY CLASS I OR CLASS II OZONE DEPLETING SUBSTANCES.

## 16 OTHER INFORMATION

### REFERENCES

- 1) LITOVITZ T L, NORMAN S A, VELTRI J C, ANNUAL REPORT OF THE AMERICAN ASSOCIATION OF POISON CONTROL CENTERS DATA COLLECTION SYSTEM. AM. J. EMERG. MED. 4: 427-458 (1986).
  - 2) WEIR R J, FISHER R S, TOXICOL. APPL. PHARMACOL. 23: 351-364 (1972).
  - 3) FAIL ET AL., FUND. APPL. TOXICOL. 17: 225-239 (1991).
  - 4) PRICE ET AL., J. AM. COLL. TOXICOL. 14: (2), 173 (ABST. P-17) (1995).
  - 5) MURRAY F J, REGUL. TOXICOL. PHARMACOL. (DEC. 1995).
  - 6) NATIONAL TOXICOLOGY PROGRAM (NTP)-TOXICOLOGY AND CARCINOGENESIS STUDIES OF BORIC ACID IN B6C3F1 MICE, TECH. REPORT SER. NO. 324, U.S. DEPT. OF HEALTH AND HUMAN SERVICES. NIH PUBL. NO. 88-2580 (1987).
  - 7) WHORTON ET AL., OCCUP. ENVIRON. MED. 51: 761-767 (1994).
  - 8) SCHOBERL ET AL., TENSIDE SURFACTANTS DETERGENTS 25: 99-107 (1988).
  - 9) HUGMAN S J, MANCE G, WATER RESEARCH CENTRE REPORT 616-M (1983).
  - 10) BUTTERWICK L, DE OUDE N, RAYMOND K, ECOTOXICOL. ENVIRON. SAFETY 17: 339-371 (1989).
- FOR GENERAL INFORMATION ON THE TOXICOLOGY OF INORGANIC BORATES, SEE PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, 4TH ED., VOL. II, (1994), CHAP. 42, BORON; ECETOC TECH. REPORT NO. 63 (1995).

PRODUCT LABEL TEXT HAZARD INFORMATION\*:

- MAY BE HARMFUL IF SWALLOWED.
- MAY CAUSE EYE DAMAGE.
- MAY BE IRRITATING TO SKIN.
- INGESTION MAY CAUSE REPRODUCTIVE HARM OR BIRTH DEFECTS BASED ON ANIMAL DATA.
- AVOID CONTAMINATION OF FOOD OR FEED.
- NOT FOR USE IN FOOD, DRUG OR PESTICIDES.
- REFER TO MSDS.
- KEEP OUT OF REACH OF CHILDREN.

\*THE WHMIS PANEL FORMAT IS USED FOR CANADIAN PRODUCT.  
NATIONAL FIRE PROTECTION ASSOC. (NFPA) CLASSIFICATION:

HEALTH 0

FLAMMABILITY 0

REACTIVITY 0

HAZARDOUS MATERIALS INFORMATION SYSTEMS (HMIS):

RED: (FLAMMABILITY) 0

YELLOW: (REACTIVITY) 0

BLUE: (ACUTE HEALTH) 1\*

\*CHRONIC EFFECTS

FOR FURTHER INFORMATION CONTACT:

U.S. BORAX INC.  
OCCUPATIONAL HEALTH & PRODUCT SAFETY DEPARTMENT  
(661) 287-6050

----- FOR ADDITIONAL INFORMATION -----  
CONTACT: MSDS COORDINATOR UNIVAR USA INC.  
DURING BUSINESS HOURS, PACIFIC TIME (425) 889-3400  
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\* \* \* E N D O F M S D S \* \* \*





10-0930

REPORT NUMBER: 703  
MSDS NO: P21725VS  
MAINFRAME UPLOAD DATE: 07/16/04

UNIVAR USA INC.  
MATERIAL SAFETY DATA SHEET

PAGE: 001

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	99.5	NOT DETERMINED	NOT DETERMINED

7758-02-3

## 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.

PRODUCT: POTASSIUM BROMIDE

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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

ORDER NO: 226085  
PROD NO : 614395

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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

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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.

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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

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WWW.DSBG.COM

END OF SAFETY DATA SHEET

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

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----- NOTICE -----  
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