

PHOTOGRAPHERS' FORMULARY INC.

P.O. Box 950 • Condon MT 59826 • 800-922-5255 • FAX 406-754-2896

THE "PMK" PYRO DEVELOPER

CATALOG NUMBER 01-5045 TO MAKE 25 LITERS OF WORKING SOLUTION

The PMK formula is designed as a universal developer for a wide variety of modern emulsions used under diverse conditions. PMK stands for "Pyro-Metol-Kodalk". Kodak has changed the name KODALK to "Balanced Alkali"; this is their proprietary name for sodium metaborate. The formula is constituted to achieve the best overall results in consideration of the following technical criteria: sharpness, maximum image stain, minimum general stain, edge effects, film speed, flexibility for zone system Plus and Minus development, stability, consistency, convenience of use and long shelf-life.

FOR YOUR CHEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. Please read the warnings listed here. Always use rubber gloves and dust mask when using chemicals.

METOL: Some individuals become sensitized (develop allergic symptoms or rashes) when using metol. If this should occur, discontinue use and consult a physician.

PYROGALLOL: Pyro is quite toxic and is readily absorbed through the lungs, skin and mouth. Pyro is also a phenol and has the potential to cause skin burns. To be on the safe side please use rubber gloves and keep your work area clean with lots of soap and water. Brief contact with the skin will cause a darkening which is not a chemical burn. Prolonged skin contact will cause a chemical burn which closely resembles a heat burn. Pyro is also very dusty. Work in a well ventilated area. Do not inhale its dust. Keep containers tightly closed and away from light.

KEEP AWAY FROM CHILDREN

FIRST AID: If contact is made, flush with water. If extensive contact is made or if in eyes, consult a physician. If inhaled or swallowed, get medical attention at once.

PHOTOGRAPHERS' FORMULARY
800-922-5255

"PMK" PYRO
FILM DEVELOPER

Ilford Films

| Film | Time 70° F | Time 80° F |
|---------------------------|------------|------------|
| Ilford FP4 (EI 160) | 12 minutes | 7 minutes |
| Ilford HP5 (EI 400) | 13 minutes | 8 minutes |
| Ilford PAN F (EI 32) | 9 minutes | |
| Ilford Delta 400 (EI 320) | 11 minutes | |

Kodak Film

| Film | Time at 70° F |
|--------------------------|---------------|
| Kodak Tri-X (EI 260) | 14 minutes |
| Kodak T-Max 100 (EI 100) | 12 minutes |
| Kodak T-Max 400 (EI 400) | 15 minutes |

Notes: Kodak T-Max 100 and T-Max 400 are extremely sensitive to development time and temperature. Carefully control the development time and use a temperature controlled water bath, if possible.

Kodak T-Max 100 appears to have a large amount of anti-halation dye. This dye must be removed or shadow separation and image clarity will suffer. Kodak recommends that the developed and fixed negatives receive an additional bath in fresh fixer to remove any anti-halation dye, our TF-4 fixer will remove this dye.

For T-Max P3200, try EI of 3200 and PMK for 10-12 min. at 80° F

Agfa Films

| Film | Time at 70° F |
|----------------------|---------------|
| Agfapan 25 (EI 16) | 11 Minutes |
| Agfapan 100 (EI 80) | 13 Minutes |
| Agfapan 400 (EI 200) | 16 Minutes |

Notes: For Agfapan 100 roll film, try EI of 100 and 11 minutes.

For more information on Pyro we now offer Gordon Hutchings book, "The Book of Pyro", cat. no. 08-0080.

FOR ANSWERS TO QUESTIONS ON THE USE OF "PMK" PYRO FILM DEVELOPER, PLEASE CALL US AT 800-922-5255.

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"PMK" PYRO
FILM DEVELOPER

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DEVELOPMENT TIMES

These are starting times. Please test before developing non-replacable films.

Ilford Films

| Film | Time 70° F | Time 80° F |
|-------------------------------|------------|-------------|
| Ilford FP4 Plus(EI 80-100) | 10 minutes | 6.5 minutes |
| Ilford HP5 Plus (EI 320-400) | 13 minutes | 8 minutes |
| Ilford Pan F Plus (EI 32) | 9 minutes | 6 minutes |
| Ilford Delta 100 (EI 80) | 11 minutes | |
| Ilford Delta 400 (EI 260-320) | 12 minutes | |

Kodak Film

| Film | Time at 70° F | Time at 80° F |
|-----------------------------|---------------|---------------|
| Kodak Tri-X (EI 260) | 14 minutes | 10 minutes |
| Kodak HS Infrared (EI 100) | 12 minutes | 7 minutes |
| Kodak T-Max 100 (EI 80-100) | 12 minutes | 8 minutes |
| Kodak T-Max 400 (EI400) | 15 minutes | 9 minutes |

Notes: Kodak T-Max 100 and T-Max 400 are extremely sensitive to development time and temperature. Carefully control the development time and use a temperature controlled water bath, if possible.

Kodak T-Max 100 appears to have a large amount of anti-halation dye. This dye must be removed or shadow separation and image clarity will suffer. Kodak recommends that the developed and fixed negatives receive an additional bath in fresh fixer to remove any anti-halation dye, our TF-4 fixer will remove this dye.

For T-Max P3200, try EI of 3200 and PMK for 10-12 min. at 80° F

Agfa Films

| Film | Time at 70° F |
|----------------------|---------------|
| Agfapan 25 (EI 16) | 11 Minutes |
| Agfapan 100 (EI 80) | 13 Minutes |
| Agfapan 400 (EI 200) | 16 Minutes |

Notes: For Agfapan 100 roll film, try EI of 100 and 11 minutes. For Fuji Neopan 400, use 12 minutes for 35 mm, 13 minutes for 120 film.

Other Films

| Film | Time at 70° F |
|---------------------------|---------------|
| Fuji Acros 100 (EI 50) | 14 Minutes |
| Berger BRF 200 (EI 100) | 12.5 Minutes |
| Fuji Neopan 1600 (EI 800) | 12 Minutes |

For more information on Pyro we offer Gordon Hutchings book, "The Book of Pyro", catalog number: 08-0080.

FOR ANSWERS TO QUESTIONS ON THE USE OF "PMK" PYRO FILM DEVELOPER, PLEASE CALL US AT 406-754-2891.

01-5050 "PMK" PYRO
FILM DEVELOPER

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THE PMK PYRO FILM DEVELOPER

CAT. NUMBER 01-5050 TO MAKE 50 LITERS OF WORKING SOLUTION

The PMK formula is designed as a universal developer for a wide variety of modern emulsions used under diverse conditions. PMK stands for "Pyro-Metol-Kodak." Kodak has changed the name KODALK to "Balanced Alkali"; this is their proprietary name for sodium metaborate. The formula is constituted to achieve the best overall results in consideration of the following technical criteria: sharpness, maximum image stain, minimum general stain, edge effects, film speed, flexibility for zone system Plus and Minus development, stability, consistency, convenience of use and long shelf-life.

FOR YOUR CHEMICAL SAFETY

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KEEP AWAY FROM CHILDREN

FIRST AID: If contact is made, flush with water. If extensive contact is made or if in eyes, consult a physician. If inhaled or swallowed, get medical attention at once.

IF FOR ANY REASON YOU DO NOT WISH TO ASSUME ALL RISKS IN USING THESE CHEMICALS, PLEASE RETURN FOR A CREDIT.

Please consult with local sewer and water authorities regarding the proper disposal of darkroom chemicals in your area.

01-5050 "PMK" PYRO
FILM DEVELOPER

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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.

Continue on page....2

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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.

Continue on page....3

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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 ⁰ C (DEC) |
| AUTOIGNITION TEMPERATURE | : | 531 ⁰ C |

Continue on page....4

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.

10-1175



Material Safety Data Sheet

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

Section 1. Chemical Product and Company Identification

| | | | |
|----------------------------|--|---------------------------------|-------------------|
| Common Name/ Trade Name | Sodium bisulfite | Code | S3700 |
| Manufacturer | SPECTRUM CHEMICAL MFG. CORP. 14422 SOUTH SAN PEDRO STREET GARDENA, CALIFORNIA 90248-9985 | CAS# | 7631-90-5 |
| Commercial Name(s) | Not available | RTECS | VZ2000000 |
| Synonym | Not available. | TSCA | On the TSCA list. |
| Chemical Name | | CI# | Not available. |
| Chemical Family | Not available. | In case of emergency | |
| Chemical Formula | NaHSO ₃ | CHEMTREC (24hr) 800-424-9300 | |
| Supplier | SPECTRUM QUALITY PRODUCTS 14422 S. SAN PEDRO STREET GARDENA, CA 90248-9985 | Emergency phone: (310) 516-8000 | |

Section 2. Composition and Information on Ingredients

| Name | CAS# | Exposure Limits | | | |
|------------------|-----------|--------------------------|---------------------------|---------------------------|-------------|
| | | TWA (mg/m ³) | STEL (mg/m ³) | CEIL (mg/m ³) | % by Weight |
| Sodium bisulfite | 7631-90-5 | | | | 100 |

Toxicological Data on Ingredients Sodium bisulfite:

Section 3. Hazards Identification

| | |
|--------------------------------|---|
| Potential Acute Health Effects | Very dangerous in case of skin contact (irritant), of ingestion. Slightly dangerous to dangerous in case of eye contact (irritant), of inhalation. Very slightly to slightly dangerous in case of skin contact (corrosive, 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. |
| Potential Chronic | CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. Toxicity of the product to the reproductive system: Not available. Repeated |

Health
Effects

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: 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. |
| 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. |

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. |
| 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. |
| Personal | Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing |

Protection in
Case of a
Large Spill

not be sufficient; consult a specialist BEFORE handling this product.

Exposure
Limits

TWA: 5 (mg/m³) from ACGIH Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

| | | | |
|-------------------------------|--|-------|----------------|
| Physical state and appearance | Solid. | Odor | Not available. |
| Molecular Weight | 104.07 | Taste | Not available. |
| pH (1% soln/water) | Not available. | Color | Not available. |
| Boiling Point | Not available. | | |
| Melting Point | Decomposes. | | |
| Critical Temperature | Not available. | | |
| Specific Gravity | 1.48 (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 | See solubility in water. | | |
| Solubility | Easily soluble in cold water, hot 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 | No specific information is available in our database regarding the reactivity of this material in presence of various other materials. |
| Corrosivity | Non-corrosive in presence of glass. |
| Special Remarks on Reactivity | No additional remark. |
| Special Remarks on Corrosivity | No additional remark. |

Section 11. Toxicological Information

| | |
|-----------------|------------------------|
| Routes of Entry | Ingestion. Inhalation. |
|-----------------|------------------------|

Toxicity to Animals Acute oral toxicity (LD50): 2000 mg/kg (Rat).

Chronic Effects on Humans Toxicity of the product to the reproductive system: Not available.

Other Toxic Effects on Humans Very dangerous in case of skin contact (irritant), of ingestion. Slightly dangerous to dangerous in case of eye contact (irritant), of inhalation. Very slightly to slightly dangerous in case of skin contact (corrosive, 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 more toxic.

Special Remarks on the Products of Biodegradation No additional remark.

Section 13. Disposal Considerations

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

Section 14. Transport Information

DOT Classification 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

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)

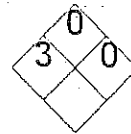
DSCL (EEC)

HMIS (U.S.A.)

| | |
|---------------------|---|
| Health Hazard | 1 |
| Fire Hazard | 0 |
| Reactivity | 0 |
| Personal Protection | |

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

Health



Flammability

Reactivity

Specific hazard

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) S1172, S1173

Other Special Considerations No additional remark.

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

Verified by E. Brull.
Name

Emergency Phone: Number: 10

Notice to Reader

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.



Material Safety Data Sheet

I - Product Identification:

| | | |
|---------------------------|--|-----------------------|
| <i>Product Name:</i> | Pyrogallol (Pyrogallic Acid) | <i>Code:</i> 1557 |
| <i>Empirical Formula:</i> | C ₆ H ₃ O ₃ | <i>CAS #:</i> 87-66-1 |
| <i>Chemical Name:</i> | Benzene-1,2,3-trihydroxy | |
| <i>Uses:</i> | Has been used as antipsoriatic | |

II - Toxicological Information:

Irritancy: Causes burns to the eyes and skin.

Adverse effects: Harmful if absorbed through the skin, inhaled, or swallowed. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May cause allergic reaction. Studies in animals have shown edema and hyperemia of the lungs, moderate fatty degeneration, round cell infiltration, and necrosis of the liver. The kidney showed hyperemia, necrosis of the epithelium, granular pigmentation, and glomerular nephritis. The heart showed separation of fibers of the myocardium, interfibrillary hemorrhages, infiltration of the endocardium, lesions of the endothelium, and fibrinous deposits in the valves. Changes in bone marrow and myeloid changes in the spleen were observed. Changes in muscle included the disappearance of nuclei in striated muscle, loss of striation, and the swelling of the muscle plasma with coagulates and decomposes. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Absorption into the body leads to the formation of methemoglobin which in sufficient concentrations causes cyanosis. Pyrogallol has a tremendous affinity for oxygen of the blood causing death by respiratory failure. Intoxication signs are vomiting, hypothermia, weakness, muscular incoordination, fine tremors, loss of reflexes, diarrhea, and coma.

Irritation Data:

Skin

Toxicity Data:

| | |
|-------------------------------|---------------------------------|
| Rabbit: 2mg/24H skin: Severe. | Rabbit: 20mg/24H eye: Moderate. |
| Oral: | Subcutaneous: |
| Human: LDLo: 28mg/kg. | Man: LDLo: 120mg/kg |
| Mouse: LD50: 300mg/kg. | Mouse: LD50: 566mg/kg. |
| Rabbit: LD50: 1600mg/kg. | |
| Intraperitoneal: | |
| Mouse: LD50: 400mg/kg. | |

III - Physical Data:

State: LIQUID SOLID X GAS

Description: White, odourless crystals. Becomes grayish on exposure to air and light.

Solubility: Freely soluble in water, in alcohol, and in ether; slightly soluble in benzene, in chloroform, and in carbon disulfide.

Other Physical Properties: mw: 126.11 mp: 131° - 133° C bp: 309°C d: 1.45

IV - Fire And Explosion Hazards:

Flammability: N/A

Extinguishing Media: Carbon dioxide, dry chemical powder, or appropriate foam.

Fire-Fighting: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

V - Reactivity Data;

Stability: Stable.

Incompatibilities: May discolour on exposure to air. Oxidizing agents.

Hazardous Decomp Products: Toxic fumes of carbon monoxide and carbon dioxide.

Hazardous Polymerization: Will not polymerise.

VI - Preventive Measures:

Personal Protective Equipment: Government approved respirator, compatible chemical-resistant gloves, chemical safety goggles, faceshield.



MEDISCA INC.

661 Route 3, Unit C, Plattsburgh, New York, 12901

Tel.: (800) 665-6334 Fax: (518) 563-5047

Specific Engineering Controls:

Safety shower and eye bath. Use only in a chemical fume hood.

Spill & Leak:

Wear self-contained breathing apparatus, rubber boots and gloves. Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pick up is complete.

Waste Disposal:

Combine with a combustible solvent. Incinerate in an incinerator equipped with afterburner and scrubber according local laws and regulations.

Storage:

Preserve in tight containers.

Shipping:

UN2811; Class 6.1; Packing group III.

VII - First Aid Measures:

Eyes:

Flush with copious amounts of water for 15 minutes, separating eyelids with fingers. Call a physician.

Skin:

Flush with copious amounts of water for 15 minutes. Remove contaminated clothing and shoes. Call a physician.

Ingestion:

Call a physician. Wash out mouth with water.

Inhalation:

Remove to fresh air. If not breathing, give A.R. If breathing is difficult, give oxygen.

NOTE: If victim is unconscious, never induce vomiting nor give liquids. Place victim in a stable side position and keep warm.

Ecological Data:

N/A

Hazardous Ingredients:

N/A

References:

Available on request

10-1285
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: $NaBO_2 \cdot 4H_2O$
[$Na_2B_2O_4 \cdot 8H_2O$]

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, $NaBO_2 \cdot 4H_2O$, 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 TREATMENT¹. 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 TESTES². 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^{3, 4}. THE DOSES ADMINISTERED WERE MANY TIMES IN EXCESS OF THOSE TO WHICH HUMANS WOULD NORMALLY BE EXPOSED⁵.

CARCINOGENICITY/MUTAGENICITY: BORIC ACID DID NOT PRODUCE ANY EVIDENCE OF CARCINOGENICITY IN MICE⁶, 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 FERTILITY⁷.

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 TOXICITY⁸:

DAPHNIDS, DAPHNIA MAGNA STRAUS

24-HR EC50 = 242 MG B/L*

TEST SUBSTANCE: * SODIUM TETRABORATE

FISH TOXICITY:

SEAWATER⁹:

DAB, LIMANDA LIMANDA

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).

96-HR LC50 = 74 MG B/L*

FRESHWATER.10:

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 7775-19-1

EINECS 231-891-6

SOUTH KOREA 9212-856

JAPANESE MITI (1)-69

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 * * *

