

**FORMULARY PRINT SPOTTING REDUCER II**

To make 375 ml of working solution

Spotting Reducer II is simply the classical Farmer's Reducer. The solution acts by conversion of the silver metal in the print to silver bromide. The reducer can be used to eliminate an unwanted dark spot in a print due to a flaw in the negative. It can also be used to reduce the contrast or white out a portion of the print or reduce the print as a whole.

Regardless of the whether the reduction is carried out on a spot or the whole print, the print must be re-washed and re-fixed (The After-Treatment) to remove the Spotting Reducer II chemicals or the print will stain. (The chemicals needed for fixing are not included in this kit; any fixer will work.)

Toned prints do not respond well to reduction; therefore, plan to use Spotting Reducer II prior to toning.

**CHEMICALS CONTAINED IN THIS KIT**

Your kit contains the following chemicals:

Chemical	Amount
Sodium thiosulfate, anhydrous	38 grams
Potassium ferricyanide	30 grams
Potassium bromide	15 grams

**CHEMICALS SAFETY**

All chemicals are dangerous and must be treated with respect. None of the chemicals in this kit need special attention.

Potassium ferricyanide: In spite of the fact that this compound contains cyanide it is not particularly toxic. The reason is that the cyanide groups are bound to the iron atom and are not free to act as a poison. The cyanide groups can be released as hydrogen cyanide gas if the potassium ferricyanide is placed in a strong acid solution; however, this formula does not call for the use of an acid.

To dispose of excess potassium ferricyanide (solid or in solution), you can usually wash the material down the drain with excess water. Before doing so, check with your local sewer and water authorities.

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

**MIXING THE STOCK SOLUTIONS**

You will need two dark brown, glass storage containers. One should have a capacity of at least 250 ml for the storage of Stock Solution A and the other should have a capacity of at least 150 ml. A mixing bowl with a capacity of more than 250 ml will also be needed.

**Stock Solution A**

Chemical	Amount
Distilled water (52°C/125°F)	200 ml
Sodium thiosulfate, anhydrous	38 grams
Distilled water to make	250 ml

Place the warm water in the mixing bowl and add the sodium thiosulfate. Stir the solution to dissolve the solid. Sodium thiosulfate dissolves slowly; therefore, be patient. After the solid has dissolved, add sufficient water to bring the final volume up to 250 ml; stir the solution to ensure it is homogeneous; then transfer it to its storage container.

**Stock Solution B**

Chemical	Amount
Distilled water (52°C/125°F)	80 ml
Potassium Ferricyanide	30 grams
Potassium Bromide	15 grams
Distilled water	125 ml

If you use the mixing bowl that was used to mix Stock Solution A, be sure it is thoroughly cleaned before using it to mix Stock Solution B. The two stock solutions, when mixed, have a very short life.



REPORT NUMBER: 703 UNIVAR USA INC.  
MSDS NO: HZS5230 MATERIAL SAFETY DATA SHEET  
MAINFRAME UPLOAD DATE: 03/30/05

PAGE: 001  
VERSION: 004

PRODUCT: SODIUM THIOSULFATE

ORDER NO: 231068  
PROD NO : 503233

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

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

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

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

PRODUCT NAME: SODIUM THIOSULFATE  
MSDS NUMBER: HZS5230  
DATE ISSUED: 3/21/2005  
SUPERSEDES: 5/22/2002  
ISSUED BY: 008614

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SODIUM THIOSULFATE

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1. PRODUCT IDENTIFICATION

SYNONYMS: SODIUM THIOSULFATE, PENTAHYDRATE; THIOSULFURIC ACID,  
DISODIUM SALT, PENTAHYDRATE  
CAS NO: 7772-98-7 (ANHYDROUS) 10102-17-7 (PENTAHYDRATE)  
MOLECULAR WEIGHT: 248.17  
CHEMICAL FORMULA: NA2S2O3.5H2O  
Distributed by:  
Univar USA Inc.  
6100 Carillon Point  
Kirkland, WA 98033

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425-889-3400

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO	PERCENT	HAZARDOUS
SODIUM THIOSULFATE	7772-98-	100%	YES

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

POTENTIAL HEALTH EFFECTS

INHALATION:

MAY CAUSE IRRITATION TO THE RESPIRATORY TRACT. SYMPTOMS MAY INCLUDE COUGHING AND SHORTNESS OF BREATH.

INGESTION:

LOW LEVEL OF TOXICITY BY INGESTION. DIARRHEA MAY OCCUR BY INGESTION OF LARGE QUANTITIES.

SKIN CONTACT:

IRRITATION MAY OCCUR FROM PROLONGED SKIN CONTACT.

EYE CONTACT:

CONTACT MAY CAUSE MECHANICAL IRRITATION.

CHRONIC EXPOSURE:

CHRONIC EXPOSURE MAY CAUSE SKIN EFFECTS.

AGGRAVATION OF PRE-EXISTING CONDITIONS:

NO INFORMATION FOUND.

4. FIRST AID MEASURES

INHALATION:

REMOVE TO FRESH AIR. GET MEDICAL ATTENTION FOR ANY BREATHING DIFFICULTY.

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INGESTION:

INDUCE VOMITING IMMEDIATELY AS DIRECTED BY MEDICAL PERSONNEL, NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON, GET MEDICAL ATTENTION.

SKIN CONTACT:

WASH EXPOSED AREA WITH SOAP AND WATER, GET MEDICAL ADVICE IF IRRITATION DEVELOPS.

EYE CONTACT:

WASH THOROUGHLY WITH RUNNING WATER, GET MEDICAL ADVICE IF IRRITATION DEVELOPS.

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5. FIRE FIGHTING MEASURES

FIRE:

NOT CONSIDERED TO BE A FIRE HAZARD.

EXPLOSION:

NOT CONSIDERED TO BE AN EXPLOSION HAZARD.

FIRE EXTINGUISHING MEDIA:

USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE.

SPECIAL INFORMATION:

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

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6. ACCIDENTAL RELEASE MEASURES

VENTILATE AREA OF LEAK OR SPILL, WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT AS SPECIFIED IN SECTION 8. SPILLS: SWEEP UP AND CONTAINERIZE FOR RECLAMATION OR DISPOSAL. VACUUMING OR WET SWEEPING MAY BE USED TO AVOID DUST DISPERSAL.

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7. HANDLING AND STORAGE

KEEP IN A TIGHTLY CLOSED CONTAINER, STORED IN A COOL, DRY, VENTILATED AREA. PROTECT AGAINST PHYSICAL DAMAGE. ISOLATE FROM INCOMPATIBLE SUBSTANCES. CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTY SINCE THEY RETAIN PRODUCT RESIDUES (DUST, SOLIDS); OBSERVE ALL WARNINGS AND PRECAUTIONS LISTED FOR THE PRODUCT.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

AIRBORNE EXPOSURE LIMITS:  
NONE ESTABLISHED.

VENTILATION SYSTEM:

IN GENERAL, DILUTION VENTILATION IS A SATISFACTORY HEALTH HAZARD CONTROL FOR THIS SUBSTANCE. HOWEVER, IF CONDITIONS OF USE CREATE DISCOMFORT TO THE WORKER, A LOCAL EXHAUST SYSTEM SHOULD BE CONSIDERED.

PERSONAL RESPIRATORS (NIOSH APPROVED):

FOR CONDITIONS OF USE WHERE EXPOSURE TO DUST OR MIST IS APPARENT AND ENGINEERING CONTROLS ARE NOT FEASIBLE, A PARTICULATE RESPIRATOR (NIOSH TYPE N95 OR BETTER FILTERS) MAY BE WORN. IF OIL PARTICLES (E.G. LUBRICANTS, CUTTING FLUIDS, GLYCERINE, ETC.) ARE PRESENT, USE A NIOSH TYPE R OR P FILTER. FOR EMERGENCIES OR INSTANCES WHERE THE EXPOSURE LEVELS ARE NOT KNOWN, USE A FULL-FACE POSITIVE-PRESSURE, AIR-SUPPLIED RESPIRATOR.

WARNING: AIR-PURIFYING RESPIRATORS DO NOT PROTECT WORKERS IN OXYGEN-DEFICIENT ATMOSPHERES.

SKIN PROTECTION:

WEAR PROTECTIVE GLOVES AND CLEAN BODY-COVERING CLOTHING.

EYE PROTECTION:

SAFETY GLASSES. MAINTAIN EYE WASH FOUNTAIN AND QUICK-DRENCH FACILITIES IN WORK AREA.

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9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

MONOCLINIC, COLORLESS CRYSTALS.

BOILING POINT:

> 100C (> 212F)

ODOR:

ODORLESS.

MELTING POINT:

48C (118F) LOSES WATER @ 100C (212F)

SOLUBILITY:

796/100 ML WATER @ 4C (39F)

VAPOR DENSITY (AIR=1):

NO INFORMATION FOUND.

DENSITY:

1.75

VAPOR PRESSURE (MM HG):

NO INFORMATION FOUND.

PH:

NO INFORMATION FOUND.

EVAPORATION RATE (BUAC=1):

NO INFORMATION FOUND.

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

0

10. STABILITY AND REACTIVITY

STABILITY:

STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE. STABILITY LIMITED IN SOLUTION.

HAZARDOUS DECOMPOSITION PRODUCTS:

OXIDES OF SULFUR AND HYDROGEN SULFIDE.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR.

INCOMPATIBILITIES:

SODIUM NITRATE, HALOGENS, AND OXIDIZING AGENTS. REACTS WITH ACIDS TO RELEASE SULFUR DIOXIDE.

CONDITIONS TO AVOID:

INCOMPATIBLES.

11. TOXICOLOGICAL INFORMATION

NO LD50/LC50 INFORMATION FOUND RELATING TO NORMAL ROUTES OF OCCUPATIONAL EXPOSURE.

-----\CANCER LISTS\-----

INGREDIENT	---NTP CARCINOGEN---		IARC CATEGORY
	KNOWN	ANTICIPATED	
SODIUM THIOSULFATE (7772-98-7)	NO	NO	NONE

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:

NO INFORMATION FOUND.

ENVIRONMENTAL TOXICITY:

NO INFORMATION FOUND.

PRODUCT: SODIUM THIOSULFATE

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13. DISPOSAL CONSIDERATIONS

WHATEVER CANNOT BE SAVED FOR RECOVERY OR RECYCLING SHOULD BE MANAGED IN AN APPROPRIATE AND APPROVED WASTE DISPOSAL FACILITY. PROCESSING, USE OR CONTAMINATION OF THIS PRODUCT MAY CHANGE THE WASTE MANAGEMENT OPTIONS. STATE AND LOCAL DISPOSAL REGULATIONS MAY DIFFER FROM FEDERAL DISPOSAL REGULATIONS.

DISPOSE OF CONTAINER AND UNUSED CONTENTS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS.

14. TRANSPORT INFORMATION

NOT REGULATED.

15. REGULATORY INFORMATION

-----\CHEMICAL INVENTORY STATUS - PART 1\-----

INGREDIENT	TSCA	EC	JAPAN	AUSTRALIA
SODIUM THIOSULFATE (7772-98-7)	YES	YES	YES	YES

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

INGREDIENT	KOREA	--CANADA--		PHIL.
		DSL	NDSL	
SODIUM THIOSULFATE (7772-98-7)	YES	YES	NO	YES

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

INGREDIENT	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	LIST	CHEMICAL CATG
SODIUM THIOSULFATE (7772-98-7)	NO	NO	NO	NO

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

INGREDIENT	CERCLA	-RCRA-	-TSCA-
		261.33	8(D)
SODIUM THIOSULFATE (7772-98-7)	NO	NO	NO

CHEMICAL WEAPONS CONVENTION: NO TSCA 12(B): NO CDTA: NO



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ORDER NO: 231068

PROD NO : 503233

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SARA 311/312; ACUTE: YES CHRONIC: NO FIRE: NO PRESSURE: NO  
REACTIVITY: NO (PURE / SOLID)

AUSTRALIAN HAZCHEM CODE: NONE ALLOCATED.  
POISON SCHEDULE: NONE ALLOCATED.

WHKIS: THIS MSDS HAS BEEN PREPARED ACCORDING TO THE HAZARD CRITERIA OF  
THE CONTROLLED PRODUCTS REGULATIONS (CPR) AND THE MSDS CONTAINS  
ALL OF THE INFORMATION REQUIRED BY THE CPR.

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#### 16. OTHER INFORMATION

##### NFPA RATINGS:

HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0



10-1010

# Material Safety Data Sheet

WEGO CHEMICAL & MINERAL CORP

239 Great Neck Road

Great Neck, NY 11021

Ph: (516) 487 3510; Fax: (516) 487 3794; email: sales@wegochem.com

Date of Revision: 3/2005

Potassium Ferricyanide

## Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** POTASSIUM FERRICYANIDE  
**Chemical Formula:**  $K_3Fe(CN)_6$   
**CAS Number:** 13746-66-2  
**Other Designations:** Potassium Hexacyanoferrate (III); Red Prussiate of Potash  
**Derivation:**  
**General Use:** Used in photography, electroplating, and as a mild oxidizing agent in organic synthesis.  
**Emergency Telephone:** 1-800-424-9300 (Chemtrec)

## Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	EINECS/ELINCS	% wt or % vol
Potassium Ferricyanide	13746-66-2	237-323-3	99

Trace Impurities:

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
Potassium Ferricyanide	5 mg CN/m <sup>3</sup>	none estab.	5 mg CN/m <sup>3</sup> (NaCN and KCN, Specifically)	none estab.	5 mg CN/m <sup>3</sup>	none estab.	5 mg CN/m <sup>3</sup> (NaCN and KCN, Specifically)

## Section 3 - Hazards Identification

☆☆☆☆ Emergency Overview ☆☆☆☆  
**CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

HMIS	
H	2
F	1
R	1
PPE†	
†Sec. 6	

### Potential Health Effects

**Primary Entry Routes:** Skin contact or absorption, inhalation.

**Target Organs:** Cardiovascular system, CNS, liver, kidneys, skin.

#### Acute Effects

**Inhalation:** May cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath. Cyanide anions (CN<sup>-</sup>) inhibit the body cells' use of oxygen by causing metabolic asphyxiation. Prolonged anoxia (reduced level of oxygen in the blood) causes central nervous system (CNS) damage. Early symptoms of exposure to potassium ferricyanide are typical CNS effects like weakness, headache, and confusion. Continued exposure causes a weak and irregular heartbeat, unconsciousness, convulsions, coma, and death. Cyanides are fast acting and highly poisonous by ingestion. As little as a few breaths of HCN vapor may stop respiration and cause collapse.

**Eye:** May cause irritation, redness and pain.

**Skin:** May cause irritation with redness and pain.

**Ingestion:** Large doses may cause gastrointestinal upset with nausea, vomiting, diarrhea, and possible cramping.

**Carcinogenicity:** Potassium ferricyanide is not listed as a carcinogen by the NTP, IARC, or OSHA.

**Medical Conditions Aggravated by Long-Term Exposure:** Diseases of kidneys, heart, lungs, and the CNS.

**Chronic Effects:** Dermatitis and skin ulcers.

## Section 4 - First Aid Measures

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

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

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## Potassium Ferricyanide

**Skin Contact:** Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

**Ingestion:** Call a poison control center. Never give anything by mouth to someone who is unconscious or convulsing.

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

**Comments:** Preparation for emergency first aid treatment involving potassium ferricyanide or any cyanide salt must be done before the exposure situation occurs. All workers involved with cyanides must receive detailed training in safe handling, first aid procedures, and the use of commercially available cyanide antidote kits.

### Section 5 - Fire-Fighting Measures

**Flash Point:** Not Combustible

**Flash Point Method:**

**Burning Rate:**

**Autoignition Temperature:** Not Combustible

**LEL:**

**UEL:**

**Flammability Classification:**

**Extinguishing Media:** Unreacted cyanide salts like potassium ferricyanide are not combustible; however, contact with acids will liberate highly toxic, flammable hydrogen cyanide (HCN) gas. Use water spray to fight fires in areas containing this material. Cool fire-exposed metal containers with large amounts of water. Do not use carbon dioxide (CO<sub>2</sub>) extinguishers; this can liberate HCN by the action of the dissolved CO<sub>2</sub>.

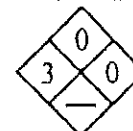
**Unusual Fire or Explosion Hazards:** Not considered to be an explosion hazard.

**Hazardous Combustion Products:**

**Fire-Fighting Instructions:** Do not release runoff from fire control methods to sewers or waterways.

**Fire-Fighting Equipment:** Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

NFPA



### Section 6 - Accidental Release Measures

**Spill/Leak Procedures:** Notify safety personnel. Provide adequate ventilation. Scrupulously avoid the addition of any acid to the spill or leak area. Scoop up spilled potassium ferricyanide into suitable containers for disposal. Carefully sweep or vacuum up small spills or residues without creating dust. Preplan and train personnel for emergency response.

**Large Spills**

**Containment:** For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

**Cleanup:** Cleanup personnel need protection against contact and inhalation.

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120).

### Section 7 - Handling and Storage

**Handling Precautions:** Protect this material from the light. Protect containers from physical damage. Prevent this material's contact with skin and eyes. Do not taste it or breathe its dust or solution mist. Regularly inspect and maintain the cyanide first aid kits that must be available in all work and storage areas.

**Storage Requirements:** Store potassium ferricyanide in a cool, dry, well-ventilated, airtight area away from ammonia, chromium trioxide, oxidizing materials, and acids.

### Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:** All handling and storage facilities must be designed to prevent accidental contact with acids.

**Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

**Administrative Controls:** Preplan and train personnel for emergency response.

**Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.

*Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

**Protective Clothing/Equipment:** Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

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## Potassium Ferricyanide

**Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.  
**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.  
**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

### Section 9 - Physical and Chemical Properties

<b>Physical State:</b> solid	<b>Water Solubility:</b> Slowly soluble in 2.5 parts cold water
<b>Appearance and Odor:</b> Bright red, crystalline powder/ Odorless.	<b>Other Solubilities:</b>
<b>Odor Threshold:</b>	<b>Boiling Point:</b>
<b>Vapor Pressure:</b>	<b>Freezing/Melting Point:</b>
<b>Vapor Density (Air=1):</b>	<b>Viscosity:</b>
<b>Formula Weight:</b>	<b>Refractive Index:</b>
<b>Density:</b>	<b>Surface Tension:</b>
<b>Specific Gravity (H<sub>2</sub>O=1, at 4 °C):</b> 1.85	<b>% Volatile:</b>
<b>pH:</b>	<b>Evaporation Rate:</b>

### Section 10 - Stability and Reactivity

**Stability:** Stable under ordinary conditions of use and storage.  
**Polymerization:** Hazardous polymerization cannot occur.  
**Chemical Incompatibilities:** Ammonia, chromium trioxide + heat, cupric nitrate, sodium nitrite + heat, acids and acid fumes.  
**Conditions to Avoid:** Light, heat, incompatibles.  
**Hazardous Decomposition Products:** When heated to decomposition or comes in contact with acid or acid fumes it emits toxic fumes of cyanides. Emits toxic fumes of cyanide and oxides of nitrogen when heated to decomposition.

### Section 11 - Toxicological Information

#### Toxicity Data:

Rat, Oral, LD<sub>50</sub>: 1600 mg/kg

\* See NIOSH, RTECS (L18225000), for additional toxicity data.

### Section 12 - Ecological Information

**Ecotoxicity:**  
**Environmental Fate:**  
**Environmental Degradation:**  
**Soil Absorption/Mobility:**

### Section 13 - Disposal Considerations

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

### Section 14 - Transport Information

#### DOT Transportation Data (49 CFR 172.101): Not regulated

<b>Shipping Name:</b>	<b>Packaging Authorizations</b>	<b>Quantity Limitations</b>
<b>Shipping Symbols:</b>	a) Exceptions:	a) Passenger, Aircraft, or Railroad:
<b>Hazard Class:</b>	b) Non-bulk Packaging:	b) Cargo Aircraft Only:
<b>ID No.:</b>	c) Bulk Packaging:	<b>Vessel Stowage Requirements</b>
<b>Packing Group:</b>		a) Vessel Stowage:
<b>Label:</b>		b) Other:
<b>Special Provisions (172.102):</b>		

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**Potassium Ferricyanide****Section 15 - Regulatory Information****US FEDERAL****TSCA**

CAS# 13746-66-2 is listed on the TSCA inventory.

**Health & Safety Reporting List**

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

**Chemical Test Rules**

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

**Section 12b**

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

**TSCA Significant New Use Rule**

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

**SARA****Section 302 (RQ)**

None of the chemicals in this material have an RQ.

**Section 302 (TPQ)**

None of the chemicals in this product have a TPQ.

**Section 313**

No chemicals are reportable under Section 313.

**Clean Air Act:**

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

**Clean Water Act:**

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

**OSHA:**

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

**STATE**

CAS# 13746-66-2 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

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

**European/International Regulations**

European Labeling in Accordance with EC Directives

**Hazard Symbols:**

XN

**Risk Phrases:**

R 21/22 Harmful in contact with skin and if swallowed.

**Safety Phrases:**

S 2 Keep out of reach of children. S 22 Do not inhale dust. S 24/25 Avoid contact with skin and eyes.

**WGK (Water Danger/Protection)**

CAS# 13746-66-2: 2

**Canada**

CAS# 13746-66-2 is listed on Canada's DSL/NDSL List.

WHMIS: Not available.

CAS# 13746-66-2 is not listed on Canada's Ingredient Disclosure List.

**Section 16 - Other Information**

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

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10-0120

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

UNIVAR USA INC.  
MATERIAL SAFETY DATA SHEET

PAGE: 00  
VERSION: 00

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

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

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

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

EMERGENCY TELEPHONE CHEMTREC (800)424-9300

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

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

## 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW WHITE, ODOURLESS, CRYSTALLINE SOLID  
IRRITANT TO EYES

### POTENTIAL HEALTH EFFECTS:

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

ABDOMINAL PAIN, NAUSEA AND VOMITING.

## 4. FIRST-AID MEASURES

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

GET MEDICAL ATTENTION IMMEDIATELY.

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



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GET MEDICAL ATTENTION IF IRRITATION OCCURS.

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

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

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

GET MEDICAL ATTENTION IMMEDIATELY.

NOTE: NEVER GIVE AN UNCONSCIOUS PERSON ANYTHING TO DRINK.

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

#### 5 FIRE-FIGHTING MEASURES

FLASH POINT NONE  
FLAMMABLE/EXPLOSION LIMITS NOT FLAMMABLE  
AUTO-IGNITION TEMPERATURE NOT APPLICABLE  
SUITABLE EXTINGUISHING MEDIA MATERIAL IS NOT COMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE TO SURROUNDING FIRE CONDITIONS.

#### FIRE FIGHTING PROCEDURE

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

#### UNUSUAL FIRE AND EXPLOSION

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

#### 6. ACCIDENTAL RELEASE MEASURES

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

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

AVOID RAISING DUST.

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

#### 7. HANDLING AND STORAGE

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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

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END OF SAFETY DATA SHEET