

If developing by inspection be sure to use the proper safelight recommended by the film manufacturer. Most line films can be used under a red safe light

Carry out the development at 20°C/68°F.

A typical developing sequence is:

Develop: 2-3 minutes or by inspection

Stop: 30 seconds in 1% acetic acid. [You may wish to rinse the film in water prior to the stop bath. Otherwise, the heat generated in the neutralization may cause the film to reticulate.]

Fix: 1-2 minutes using Formulary The Photographer's Formulary TF-4 Rapid Fix (Cat. no. 03-0142) or using Formulary Fixer 7 (Catalog number 03-0110). Use 2-4 minutes with Formulary Fixer 6 (Catalog number 03-0070)

Wash: 5-10 minutes

Catalog number 01-1300 - 1 liter
01-1330 - 2 liters
01-1350 - 4 liters

PHOTOGRAPHERS' FORMULARY INC.

FORMULARY DEVELOPER 70 For high-contrast film

Formulary Developer 70 -- similar to Ansco 70 -- is a high-contrast, hydroquinone-based film developer intended for developing copying films such as Kodalith. Developer 70 produces dense blacks with clear highlights and sharp edge separation.

CHEMICAL SAFETY

All chemicals are dangerous and must be treated with respect. Please read the chemical warning on each package. There is one chemical in this kit that needs special attention: sodium hydroxide.

Sodium hydroxide, as a solid or in solution, is a dangerous chemical. It is a corrosive and, if spilled on the skin, will cause a chemical burn. Its action is insidious because the burn occurs without pain. When working with sodium hydroxide wash your hands frequently and without soap. If you detect a soapy feeling while washing, sodium hydroxide is present. In such a case wash your hands thoroughly with soap and water.

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

The user assumes all risks upon accepting these chemicals. IF FOR ANY REASON YOU DO NOT WISH TO ASSUME ALL RISKS, PLEASE RETURN THE CHEMICALS WITHIN 30 DAYS FOR A FULL REFUND. Please consult with local sewer and water authorities regarding proper disposal of darkroom chemicals in your area.



PHOTOGRAPHERS' FORMULARY INC.

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

DEVELOPER 70
CAT. NO. 01-1300, -1330, -1350

PHOTOGRAPHERS'
FORMULARY

PAGE 4
1, 2, OR 4 LITERS

DEVELOPER 70
CAT. NO. 01-1300, -1330, -1350

PHOTOGRAPHERS'
FORMULARY

PAGE 1
1, 2, OR 4 LITERS

10-1050

REPORT NUMBER: 703

UNIVAR USA INC.

PAGE: 001

MSDS NO: BA201279

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 12/09/03

VERSION: 003

PRODUCT: POTASSIUM METABISULFITE

ORDER NO: 218481

PROD NO : 666873

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

UNIVAR USA INC.

(425)889-3400

6100 CARILLON POINT

, KIRKLAND

, WA 98033

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

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

PRODUCT IDENTIFICATION

PRODUCT NAME: POTASSIUM METABISULFITE

MSDS#: BA201279

DATE ISSUED: 08/07/03

SUPERSEDES: 01/29/00

ISSUED BY: 009130

MATERIAL SAFETY DATA SHEET

1. Substance/preparation and company identification

Potassium Metabisulfite

Use: Chemical

Company:

BASF Aktiengesellschaft Unternehmensbereich Anorganika E-CAA

67056 Ludwigshafen, Deutschland

Telephone: +49-621-60-76416

Telefax number: +49-621-60-76318

E-mail address: claudia.kraeh@basf-ag.de

PRODUCT: POTASSIUM METABISULFITE

ORDER NO: 210481

PROD NO : 666873

Emergency information:

Fire brigade BASF Ludwigshafen

Telephone: +49-621-60-43333

Telefax number: +49-621-60-92664

2. Composition/information on ingredients

Chemical nature

dipotassium disulphite

CAS Number: 16731-55-8

EG-Number: 240-795-3

3. Hazard identification

Risk of serious damage to eyes.

Irritating to respiratory system.

Contact with acids liberates toxic gas.

4. First-aid measures

General advice:

Remove contaminated clothing.

If inhaled:

If difficulties occur after dust has been inhaled, remove to fresh air and seek medical attention.

Product: Potassium Metabisulfite food grade (E224)

On skin contact:

Wash thoroughly with soap and water.

On contact with eyes:

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:

Rinse mouth and then drink plenty of water.

Note to physician:

Hazards: Risk of sulfur dioxide development by reaction with gastric acid after swallowing.

5. Fire-fighting measures

Suitable extinguishing media:

water

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Specific hazards:

Sulphur dioxide

The substances/groups of substances mentioned can be released if the product is involved in a fire.

Special protective equipment:

Wear a self-contained breathing apparatus.

Further information:

Contaminated extinguishing water must be disposed of in accordance with official regulations.

6. Accidental release measures

Personal precautions:

Avoid dust formation. Ensure adequate ventilation.

Environmental precautions:

Do not discharge into drains/surface waters/groundwater. Do not discharge into the subsoil/soil.

Methods for cleaning up or taking up:

For large amounts: Sweep/shovel up. Dispose of absorbed material in accordance with regulations.

For residues: Sweep/shovel up. Dispose of absorbed material in accordance with regulations.

7. Handling and storage

Handling

Avoid dust formation. Use only in well ventilated areas.

Protection against fire and explosion:

Storage

Segregate from acids and acid forming substances. Segregate from oxidants.

Do not store with: sodium nitrate, sodium nitrite, sodium sulfide

Further information on storage conditions:

Keep in a cool place. Keep container dry. Keep container in a well-ventilated place.

8. Exposure controls and personal protection

Components with workplace control parameters:

7446-09-5: Sulphur dioxide

Personal protective equipment

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Respiratory protection:

Suitable respiratory protection for lower concentrations or short-term effect: Particle filter EN 143 Type P1, low efficiency, (solid particles of inert substances).

Hand protection:

Suitable chemical resistant safety gloves (EN 374) also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 460 minutes of permeation time according to EN 374): E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), polyvinylchloride (0.7 mm) and other

Supplementary note:

The specifications are based on own tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined in accordance to EN 374. Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:

Tightly fitting safety goggles (splash goggles) (EN 166)

General safety and hygiene measures:

Hands and/or face should be washed before breaks and at the end of the shift.

9. Physical and chemical properties

Form: powder
Color: white
Odor: pungent Odor

pH value: 3,5-4,5
(50 g/l, 20 °C)

Melting temperature: 190 °C
decomposition point: 150 °C

Product: Potassium Metabisulfite food grade (E224)
(30042359/SDS GEN_EU/EN)

Bulk density: 1.100 - 1.300 kg/m³

Solubility in water:
450 g/l
(20 °C)

Partitioning coefficient n-octanol/water (log Pow): -4 (OECD Guideline 107)

PRODUCT: POTASSIUM METABISULFITE

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10. Stability and reactivity

Thermal decomposition: > 150 C

Substances to avoid:

acids, oxidizing agent, nitrites, nitrates

Hazardous reactions:

Reacts with nitrites. Reacts with nitrates. Reacts with oxidizing agents.

Hazardous decomposition products:

Sulphur dioxide

11. Toxicological information

LD50/oral/rat: 2.300 mg/kg (BASF-Test)

by inhalation/rat: / 8 h(BASF-Test)

Inhalation-risk test (IRT):

No mortality within 8 hours as shown in animal studies. The inhalation of a highly saturated vapor-air mixture represents no acute hazard.

Primary skin irritation/rabbit:

non-irritant (BASF-Test)

Primary irritations of the mucous membrane/rabbit:

Risk of serious damage to eyes. (OECD Guideline 405)

Irritating to respiratory system.

A sensitizing effect on particularly sensitive individuals cannot be excluded.

Further information:

In the majority of studies performed with microorganisms and in mammalian cell culture, a mutagenic effect was not found. A mutagenic effect was also not observed in in vivo tests.

The results of animal studies gave no indication of a fertility impairing effect.

No indications of a developmental toxic / teratogenic effect were seen in animal studies.

12. Ecological information

PRODUCT: POTASSIUM METABISULFITE

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Ecotoxicity

Toxicity to fish:

OECD 203; ISO 7346; 84/449/EEC, C.1

Brachydanio rerio/LC50 (96 h): 460 - 1.000 mg/l

Microorganisms/Effect on activated sludge:

DIN 38412 Part 8

Pseudomonas putida/ECS0 (17 h): 65 mg/l

Persistence and degradability

Assessment: Inorganic product which cannot be eliminated from water by biological purification processes.

Chemical oxygen demand (COD): (calculated) approx. 140 mg/g

Bioaccumulation potential

Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Additional information

Other ecotoxicological advice:

Higher concentrations of the substance may cause a strong chemical oxygen consumption in biological sewage-treatment plants and/or waterways. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

13. Disposal considerations

Contact manufacturer regarding recycling.

Contact waste centre regarding recycling.

Must be dumped or incinerated in accordance with local regulations.

Contaminated packaging:

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

14. Transport information

Not classified as hazardous under transport regulations (ADR RID ADNR IHDG/GGVSee ICAO/IATA)

15. Regulatory information

Regulations of the European union (Labelling) / National legislation/
Regulations EG-Number: 240-795-3

Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws,

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regulations and administrative provisions relating to the classification,
packaging and labelling of dangerous substances:

Hazard symbol(s)

Xi Irritant.

R-phrase(s)

R37 Irritating to respiratory system.

R41 Risk of serious damage to eyes.

R31 Contact with acids liberates toxic gas.

S-phrase(s)

S39 Wear eye/face protection.

S26 In case of contact with eyes, rinse immediately with plenty of water and
seek medical advice.

Other regulations

16. Other information

10-0930

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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 7758-02-3	99.5	NOT DETERMINED	NOT DETERMINED

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW WHITE, ODOURLESS, CRYSTALLINE SOLID
IRRITANT TO EYES

POTENTIAL HEALTH EFFECTS:

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

ABDOMINAL PAIN, NAUSEA AND VOMITING.

4. FIRST-AID MEASURES

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

GET MEDICAL ATTENTION IMMEDIATELY.

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

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GET MEDICAL ATTENTION IF IRRITATION OCCURS.

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

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

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

GET MEDICAL ATTENTION IMMEDIATELY.

NOTE: NEVER GIVE AN UNCONSCIOUS PERSON ANYTHING TO DRINK.

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

5 FIRE-FIGHTING MEASURES

FLASH POINT NONE

FLAMMABLE/EXPLOSION LIMITS NOT FLAMMABLE

AUTO-IGNITION TEMPERATURE NOT APPLICABLE

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

FIRE FIGHTING PROCEDURE

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

UNUSUAL FIRE AND EXPLOSION

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

6. ACCIDENTAL RELEASE MEASURES

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

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

AVOID RAISING DUST.

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

7. HANDLING AND STORAGE

PRODUCT: POTASSIUM BROMIDE

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

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

PERSONAL PROTECTIVE EQUIPMENT:

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

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

9. PHYSICAL AND CHEMICAL PROPERTIES

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

SOLUBILITY:

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

SPECIFIC GRAVITY 2.75
DECOMPOSITION TEMPERATURE FROM CA. 800 C

10. STABILITY AND REACTIVITY

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

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UNIVAR USA INC.
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HAZARDOUS DECOMPOSITION
PRODUCTS HBR
HAZARDOUS POLYMERIZATION WILL NOT OCCUR

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

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

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

MUTAGENICITY NOT MUTAGENIC BY THE AMES TEST

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

12. ECOLOGICAL INFORMATION

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

AQUATIC TOXICITY

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

AVIAN TOXICITY:

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

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

13. DISPOSAL CONSIDERATIONS

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

PRODUCT: POTASSIUM BROMIDE

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14. TRANSPORTATION INFORMATION

DOT NOT REGULATED
IMO NOT REGULATED
ICAO/IATA NOT REGULATED

15. REGULATORY INFORMATION

USA REPORTED IN THE EPA TSCA INVENTORY

CANADA LISTED IN DSL

EEC NO. 231-830-3

JAPAN LISTED IN MITI (1-108)

AUSTRALIA LISTED IN AICS

CHINA INVENTORY LISTED

SOUTH KOREA LISTED IN ECL (KE-29079)

SWITZERLAND GIFTKLASSE 3

PHILIPPINES LISTED IN PICCS

16. OTHER INFORMATION

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

THE HSE POLICY OF DEAD SEA BROMINE GROUP

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

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

WITHIN THIS FRAMEWORK DSBG IS COMMITTED TO:

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

PRODUCT: POTASSIUM BROMIDE

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PROGRAMS

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

PREPARED BY HSE DIVISION IN ISRAEL

TELEPHONE: +/972-8-6297830

TELEFAX: +/972-8-6297832

WWW.DSBG.COM

END OF SAFETY DATA SHEET

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UNIVAR USA INC.

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

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

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

----- NOTICE -----

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

ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A

PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED

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

CONSEQUENTIAL DAMAGES. **

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

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE
MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS
BELIEVED TO BE ACCURATE, UNIVAR MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR
SUFFICIENCY. CONDITIONS OF USE ARE BEYOND UNIVARS CONTROL AND THEREFORE USERS
ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO
DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY
ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM
THE PUBLICATION OR USE OF, OR RELIANCE UPON , INFORMATION CONTAINED HEREIN.
THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT
RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER
PROCESS.

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



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

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

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

Continued on Next Page

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.
Skin Contact	After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.
Serious Skin Contact	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.
Inhalation	Allow the victim to rest in a well ventilated area. Seek immediate medical attention.
Serious Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
Ingestion	Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

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

Section 6. Accidental Release Measures

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

Section 7. Handling and Storage

Precautions	Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, alkalis.
Storage	Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	TWA: 0.4 (ppm) TWA: 2 (mg/m ³) Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

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

Continued on Next Page

Section 10. Stability and Reactivity Data

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

Section 11. Toxicological Information

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

Section 12. Ecological Information

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

Section 13. Disposal Considerations

Waste Disposal

Section 14. Transport Information

DOT Classification CLASS 6.1: Poisonous material.

Identification : Hydroquinone ; UN2662 PG: III

Special Provisions for Transport Not available.

DOT (Pictograms)



Section 15. Other Regulatory Information and Pictograms

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

California Proposition 65 Warnings

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

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

HMIS (U.S.A.)

Health Hazard	2
Fire Hazard	1
Reactivity	0
Personal Protection	E

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

Health



Flammability

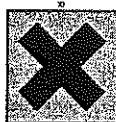
Reactivity

Specific hazard

WHMIS (Canada) (Pictograms)



DSCL (Europe) (Pictograms)



TDG (Canada)
(Pictograms)



ADR (Europe)
(Pictograms)



Protective Equipment



Gloves.



Lab coat.



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



Splash goggles.

Section 16. Other Information

MSDS Code H3320

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

Other Special Considerations Not available.

Validated by Sonia Owen on 1/20/2003.

Verified by Sonia Owen.

Printed 1/21/2003.

CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.

10-12-10

MATERIAL SAFETY DATA SHEET

NUMBER 011

Solvay Minerals, Inc., Green River, WY.

Date: June 26, 2003

Supersedes edition: 04/09/03

Purpose of revision: Phone numbers, Sections 11.2, 12.1, 15.7

Issued by: P J Luzmoor, Safety/Training Dept.

HAZARDOUS MATERIAL INFORMATION SYSTEM(HMIS®) H=3 F=0 R=1 PERSONAL PROTECTION = J

The following information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations of mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. (Unless noted to the contrary, the technical information applies only to pure product).

MANUFACTURER/IMPORTER: Solvay Minerals, Inc., PO BOX 27328-Houston, TX. 77227-7328 Phone: 800-443-2785

Visit us on the WEB @ www.solvayminerals.com

Telephone #-Emergencies (USA): 1-307-872-6688 (Solvay Minerals, Green River, WY.)

Telephone #-Emergencies (USA): 1-800-424-9300 (CHEMTREC)

Telephone #-Emergencies (INTERNATIONAL/MARITIME): 1-703-527-3887 (CHEMTREC)

Telephone #-Emergencies (CANADA): 1-613-996-6666 (CANUTEC)

Telephone #-Emergencies (MEXICO): 01-800-00-214-00(Mex. Republic)-0-11-525-559-1588 (Elsewhere)

1. PRODUCT IDENTIFICATION

- 1.1 Product Name: ~~CAUSTIC SODA ANHYDROUS~~
- 1.2 Chemical Name: Sodium hydroxide.
- 1.3 Synonyms: Caustic soda (beads-flakes-pearls-microppearls) sodium hydrate
- 1.4 Trade Names: Caustic soda, sodium hydroxide-solid.
- 1.5 Recommended uses: Pulp and paper, aluminum, petroleum refining, chemicals, metal cleaning, food preparation, etching and electroplating, laundering and bleaching
- 1.6 Formula: NaOH
- 1.7 Molecular Weight: 40.01
- 1.8 CAS No.: 1310-73-2
- 1.9 EINECS #: 215-185-5

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS/FORMULA	CAS #	UN #	PERCENT
Sodium Hydroxide-NaOH	1310-73-2	1823	>98.00%

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3. HAZARD IDENTIFICATION

- 3.1 Sodium hydroxide-solid is a white, crystalline, translucent corrosive material. Causes severe eye and skin burns. Reacts with moisture to release heat and reacts with metals to release hydrogen.
- 3.2 Route(s) of Entry: Inhalation-Yes Skin-Yes Ingestion-Yes
- 3.3 Effects of exposure: Corrosive. Causes severe eye and skin burns. Eye, skin, and respiratory tract irritant.

Inhalation: Inhalation of mists and dusts cause burns of the nasal passage, severe irritation of the respiratory tract and gastrointestinal tract damage. May cause pulmonary edema.

Eyes: Intense irritation and burns to the eyes and eyelids. Potential loss of sight.

Skin: Intense irritation and burns, reddening and swelling to the skin. Deep ulcerations, difficult to heal. Upon contact with product in solution, the skin becomes "soapy" to the touch.

Ingestion: Intense irritation and burns to the mouth, throat, esophagus and stomach. Ingestion of concentrated solutions has caused death in animals and humans. (Gosselin, Smith, and Hodge, 1984; PB 234-899, 1984).

4. FIRST AID MEASURES

- 4.1 *Inhalation:* Remove individual from area of exposure to fresh air, support breathing as necessary. Seek immediate medical attention.
- Eyes:* Immediately flush eyes and surrounding area for at least 15 minutes, using large amounts of water. Lift eyelids to insure the flushing of entire eye surface and the underside of eyelids. Seek immediate medical attention.
- Skin:* Immediately direct individual under a shower. Remove contaminated clothing including footwear. Wash affected skin with water until "soapy" feel is gone. Continue irrigation and seek immediate medical attention if contact is extended or with a hot solution.
- Ingestion:* IN ALL CASES, CALL A PHYSICIAN IMMEDIATELY. REQUEST AMBULANCE TRANSPORT TO NEAREST HOSPITAL. Do not attempt to give anything by mouth. Treat for shock.
- 4.2 **Medical Conditions Aggravated by Exposure:** Skin and lung disorders may be affected adversely by sodium hydroxide; an individual's specific medical condition and type of exposure determine the likelihood of an adverse effect.

5. FIRE FIGHTING MEASURES

- 5.1 Flash Point: Non combustible. *Method:* Not applicable.
- 5.2 Auto ignition Temperature: Not applicable.
- 5.3 Flammability Limits: *Lower & Upper Limit:* Non flammable.
- 5.4 Unusual Fire and Explosion Hazards: Causes exothermic reaction on contact with water. Formation of flammable gas on contact with certain metals
- 5.5 Common Extinguishing Methods: Not applicable.

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- 5.6 **Fire Fighting Procedures:** Extinguish fire using agent suitable for surrounding fire. Use water spray to keep containers cool. Keep water away from direct contact with material.

6. ACCIDENTAL RELEASE MEASURES

- 6.1 **Spills:** Wear proper protective clothing (see section 8). Keep water away from the area of release. Stop or control the spill without undue risk to personnel. Prompt cleanup and removal are necessary. In case of rain, protect product with the aid of a plastic sheet to avoid the run-off of solution into the sewer. Shovel material into a suitable dry container. Isolate discharged material for disposal in accordance with applicable federal, state, and local environmental laws and regulations.

7. HANDLING AND STORAGE

- 7.1 **Handling:** Avoid contact with the skin, eyes, or clothing. **DO NOT WEAR CONTACT LENSES, EVEN WITH PROPER EYE PROTECTION, WHEN HANDLING THIS PRODUCT.** Use adequate ventilation and use NIOSH/MSHA approved full-face respiratory protection when exposure to excessive dust is possible. Wash exposed areas immediately and thoroughly after skin contact from working with this product and before eating, drinking, using tobacco products or using the rest room. The effects of exposure can cause burns that are not immediately painful or visible.
- 7.2 **Storage:** Keep in a closed, properly labeled container in a well ventilated, dry area away from acids, water, oxidizing materials, and metals (tin, aluminum, and zinc). Protect from physical damage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- 8.1 **Exposure Limits:** ACGIH 2002-2003 ceiling=2 mg/m³, OSHA PEL ceiling=2 mg/m³.
- 8.2 **Ventilation:** Effective ventilation should be provided to meet established exposure limits. Local exhaust ventilation advised when working with solution or when excessive mists are present.
- 8.3 **Respiratory Protection:** Wear full-face respirators approved by NIOSH/MSHA if dusts are expected or exceed established exposure limits.
- 8.4 **Protective Gloves:** Wear chemical resistant gloves such as natural or butyl rubber, neoprene, or PVC.
- 8.5 **Eye Protection:** Wear chemical safety goggles and chemical face shield. **DO NOT WEAR CONTACT LENSES, EVEN WITH EYE PROTECTION.**
- 8.6 **Other Protective Clothing or Equipment:** Wear rubber or vinyl impervious boots, pants, coat, or apron with long sleeves, and other protective clothing suitable for use conditions to prevent contact with skin or eyes. An eyewash and safety shower should be nearby and ready for use. Use good hygiene practices when handling this product including changing work clothes after use. Do not eat, drink or smoke in areas where this material is handled.



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9. PHYSICAL AND CHEMICAL PROPERTIES

- 9.1 Appearance: solid, crystalline, corrosive material. Color: translucent. Odor: Odorless.
- 9.2 Melting Point: 318 ° C (604° F).
- 9.3 Boiling Point: 1390 ° C (2534° F).
- 9.4 Specific Gravity (H₂O=1): 2.13 @ 15.5° C (60° F).
- 9.5 Vapor Density (air=1): Not applicable.
- 9.6 Vapor Pressure: 1.5 mm HG, 0.2 kPa @ 20° C (68°F).
- 9.7 Coefficient of Water/Oil Distribution: Not applicable
- 9.8 Percent volatile (by volume): Not applicable
- 9.9 Solubility: Completely soluble in water (50% solution @ >10° C (50° F) accompanied by a significant release of heat).
- 9.10 Decomposition Temperature: Not available.
- 9.11 Viscosity: 50 cps @ 36°C (97° F) for a 50% solution.
- 9.12 pH: 14.0 (5% solution).
- 9.13 Evaporation Rate: Not Applicable.
- 9.14 Bulk Density: .5-.75 kg/dm³

10. STABILITY AND REACTIVITY

- 10.1 Stability: Slightly reactive.
- 10.2 Hazardous Decomposition Products: None.
- 10.3 Conditions to Avoid: Strong alkali. When in contact with water, may generate sufficient heat (with splattering) to ignite combustible materials. When moist, reacts with some metals producing hydrogen, a flammable gas.
- 10.4 Materials and Substances to Avoid: Contact with acids, flammable liquids, organic halogen compounds, nitro compounds, and amphoteric metals, such as aluminum, magnesium, and zinc.

11. TOXICOLOGICAL INFORMATION

- 11.1 Acute toxicity: LD₅₀-oral: 400 mg/kg species: rabbit
- 11.2 Chronic toxicity: Inhalation, acute and repeated exposure, rat, target organ: respiratory system, corrosive effect. Oral route, after repeated exposure, rat, target organ: gastro-intestinal system, corrosive effect. In vitro, no mutagenic effect. Prolonged exposure to high concentrations can cause ulceration of nasal passages and lung irritation.

12. ECOLOGICAL INFORMATION

- 12.1 Acute Ecotoxicity: Fishes, *Gambusia affinis*, LC₅₀, 96h, 125 mg/l @ pH>10. Crustaceans, *Ceriodaphnia*, EC₈₀, 48h, 40 mg/l @ pH>10.



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13. DISPOSAL CONSIDERATIONS

- 13.1 Waste treatment: If considered a waste, Caustic Soda may be a characteristic hazardous waste under 40 CFR 261. All residual Sodium Hydroxide-solid should be removed from any container prior to disposal. It is recommended that Sodium Hydroxide-solid waste is disposed of in an EPA approved disposal facility in accordance with applicable environmental laws and regulations.
- 13.2 RCRA waste #: 40 CFR 261.22, characteristic of corrosivity (D002)-see section 13.1.

14. TRANSPORT INFORMATION

- 14.1 UN #: 1823
- 14.2 TDG class: 8 TDG packing group.: II
TDG subsidiary class (es): (9.2) RL for division 9.2: 50 Kg.
- 14.3 DOT ERG guide #: 154
- 14.4 Hazard class: IMO: 8 DOT: 8(Corrosive).
- 14.5 Proper shipping name: TDG,IMO,DOT: Sodium hydroxide, solid,
- 14.6 STCC #: 4935240

15. REGULATORY INFORMATION

- 15.1 NFPA: *Health-3 Flammability-0 Reactivity-1 Special-None*
HMIS: *Health - 3 Fire-0 Reactivity-1 Personal Protection-J-*
WHMIS: Class E-CORROSIVE. This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*.
- 15.2 Regulatory/Carcinogenicity Status: NTP (1987), IARC: (1990), OSHA: (1987), None.
- 15.3 CERCLA reportable quantity: 1000 pounds (454 KG).
- 15.4 SARA Listing: Yes. Sodium hydroxide-solid - CAS 1310-73-2
- 15.5 Canadian DSL Registration: Yes
- 15.6 TSCA Inventory: Yes.
- 15.7 EEC Labeling: Name of dangerous products-sodium hydroxide.
Labeling following Directive 1999/45/EC:

<u>Symbols</u>	<u>C</u>	<u>Corrosive</u>
Phrases R	35	Causes severe burns
Phrases S	(1/2)	Keep locked up and out of reach of children
	26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	37/39	Wear suitable gloves and eye/face protection.
	45	In case of accident or if you feel unwell, seek medical advice immediately



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(show label where possible).

16. OTHER INFORMATION

ALWAYS add sodium hydroxide-solid to water with constant agitation. NEVER add water to the sodium hydroxide-solid.

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