

J.T. Baker Inc. 222 Red School Lane Phillipsburg, NJ 08865

24-Hour Emergency Telephone 908-859-2151 National Response Center 800-424-8802 Chemtrec 800-424-9300

ERIAL SAFETY

SIGNALÉTIQUE National Response In Canada CANUTEC 613-996-6666

DE SEGURIDAD

Outside U.S. and Canada Chemtrec 202-483-7616

B3=05 -04

05/01/89 Effective:

Bromine

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J.T.BAKER INC., 222 Red School Lane, Phillipsburg, NJ 08865

SECTION I - PRODUCT IDENTIFICATION

Product Name:

Bromine

Common Synonyms: N/A

Chemical Family: Halogens

Formula:

Formula Wt.:

79.90

CAS No.:

7726-95-6

NIOSH/RTECS No.: EF9100000

Product Use:

Laboratory Reagent

Product Codes:

9764,9760

PRECAUTIONARY LABELING

BAKER SAF-T-DATA* System









Laboratory Protective Equipment









U.S. Precautionary Labeling

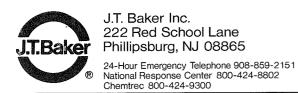
DANGER! POISON!

CAUSES SEVERE BURNS. MAY BE FATAL IF SWALLOWED OR INHALED. VAPOR EXTREMELY IRRITATING. INHALATION HAZARD. STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.

Keep from contact with clothing and other combustible materials. Do not store near combustible materials. Do not get in eyes, on skin, on clothing. Do not breathe vapor. Use only with adequate ventilation and in a closed system. Wear goggles, synthetic rubber gloves, and synthetic rubber protective clothing when handling. Keep in tightly closed container. Wash thoroughly or handling. In case of fire, soak with water. In case of spill, keep upwind and flush away by flooding with water applied quickly to entire spill.

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PRECAUTIONARY LABELING (CONTINUED)

International Labeling

Very toxic by inhalation. Causes severe burns.

Keep container tightly closed and in a well-ventilated place. In case of contact with eyes, rinse immediately with plenty of water and seek medical

SAF-T-DATA* Storage Color Code: Yellow Stripe (store separately)

SECTION II - COMPONENTS

Component Bramine

CAS No. 7726-95-6 Weight % 90-100

OSHA/PEL

SECTION III - PHYSICAL DATA

Boiling Point: 59°C (138°F)

(at 760 mm Hg)

Vapor Pressure (mmHg): 226

(20°C)

Melting Point: -7°C (19°F)

(at 760 mm Hg)

Vapor Density (air=1): 7.1

Specific Gravity: 3.12

 $(H_{2}0=1)$

Evaporation Rate: N/A

Solubility(H_0 0): Moderate (1-10%)

% Volatiles by Volume: 100

(21°C)

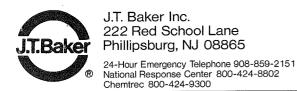
pH: N/A

Odor Threshold (ppm): N/A

Physical State: Liquid

Coefficient Water/Oil Distribution: N/A

Appearance & Odor: Dark reddish-brown liquid. Pungent odor.



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SECTION IU - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Closed Cup): N/A

NFPA 704M Rating: 4-0-0 OXY

ERIAL SAFETY DATA

Autoignition Temperature: N/A

Flammable Limits:

Upper - N/A

Lower - N/A

Fire Extinguishing Media

Use water spray.

Special Fire-Fighting Procedures

Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode. Move containers from fire area if it can be done without risk. Use water to keep fire-exposed containers cool.

Unusual Fire & Explosion Hazards

Strong oxidizer. Contact with other material may cause fire.

Toxic Gases Produced

hydrogen bromide

Explosion Data-Sensitivity to Mechanical Impact

None identified.

Explosion Data-Sensitivity to Static Discharge

None identified.

SECTION U - HEALTH HAZARD DATA

Threshold Limit Value (TLV/TWA): 0.7 mq/m3 (0.1 ppm)

Short-Term Exposure Limit (STEL): 2 mg/m³ (mgg 8.0)

Permissible Exposure Limit (PEL): 0.7 mq/m³ (0.1 ppm)

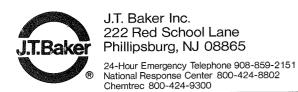
Toxicity of components

Inhalation Mouse LC_{50} for Bromine

750 ppm

OSHA Req: No Carcinogenicity: NTP: No IARC: No Z List: No

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SECTION U - HEALTH HAZARD DATA (CONTINUED)

Carcinogenicity None identified.

Reproductive Effects None identified.

Effects of Overexposure

INHALATION:

irritation of nose and throat, severe irritation of

respiratory system, coughing, chest pains, irritation of

nose and throat, may cause pulmonary edema

SKIN CONTACT:

irritation, severe irritation or burns

EYE CONTACT:

irritation, severe irritation or burns

SKIN ABSORPTION: none identified

INGESTION:

nausea, vomiting, gastrointestinal irritation, burns to

mouth and throat

CHRONIC EFFECTS: none identified

Target Organs

respiratory system, eyes, skin, central nervous system, heart

Medical Conditions Generally Aggravated by Exposure

asthma, heart disorders, respiratory system disease, damaged skin

Primary Routes of Entry

inhalation, ingestion, eye contact, skin contact

Emergency and First Aid Procedures

INGESTION:

If swallowed, do NOT induce vomiting. If CALL A PHYSICIAN.

conscious, give water, milk, or milk of magnesia.

INHALATION:

If inhaled, remove to fresh air. If not breathing, give

artificial respiration. If breathing is difficult, give

oxygen.

SKIN CONTACT: In case of contact, immediately flush skin with plenty of

water for at least 15 minutes while removing contaminated

clothing and shoes. Wash clothing before re-use.



Disposal Procedure

environmental regulations.

E/ Hazardous Waste Number:

MATERIAL SAFETY DATA SHEET

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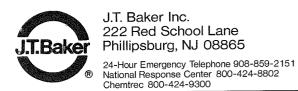
Page: 5 Bromine B5J05 -04 Issued: 02/05/91 Effective: 05/01/89 SECTION U - HEALTH HAZARD DATA (CONTINUED) In case of eye contact, immediately flush with plenty of EYE CONTACT: water for at least 15 minutes. SARA/TITLE III HAZARD CATEGORIES and LISTS Acute: Yes Chronic: Yes Flammability: Yes Pressure: No Reactivity: No Extremely Hazardous Substance: Yes Contains Bromine (RQ = 1 LB, TPQ = 500 LBS) CERCLA Hazardous Substance: No SARA 313 Toxic Chemicals: No TSCA Inventory: Yes SECTION VI - REACTIVITY DATA "我们我们是我们的我们就是我们就是我们的,我们也是我们的,我们就是我们的人们的,我们就是我们的,我们就是我们的,我们就是我们的,我们就会会会会会会会会会会会会 Hazardous Polymerization: Will not occur Stability: Stable heat, moisture, sunlight Conditions to Avoid: strong reducing agents, combustible materials, most Incompatibles: common metals, potassium, alkalies, organic materials, alcohols, amines and ammonia Decomposition Products: hydrogen bromide SECTION VII - SPILL & DISPOSAL PROCEDURES Steps to be Taken in the Event of a Spill or Discharge Wear self-contained breathing apparatus and full protective clothing. Stop leak if you can do so without risk. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Flush area with flooding amounts of water, (Use caution.)

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D001, D002 (Ignitable, Corrosive Waste)

Dispose in accordance with all applicable federal, state, and local

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SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT

Uentilation:

Use general or local exhaust ventilation to meet TLV

requirements.

Respiratory Protection: Respiratory protection required if airborne

concentration exceeds TLV. At concentrations up to 5

ppm, a chemical cartridge respirator with acid cartridge is recommended. Above this level, a self-contained breathing apparatus is advised.

Eye/Skin Protection:

Safety goggles with face shield, uniform, protective

suit, synthetic rubber gloves are recommended.

SECTION IX - STORAGE AND HANDLING PRECAUTIONS

Spr-T-DATA* Storage Color Code: Yellow Stripe (store separately)

Storage Requirements

Keep container tightly closed. Store separately and away from flammable and combustible materials. Keep containers out of sun and away from heat. Store above 6°C.

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

Domestic (D.O.T.)

Proper Shipping Name:

Bromine, "POISON - INHALATION HAZARD"

Hazard Class:

Corrosive material (liquid)

UN/NA: UN1744

Labels: CORROSIVE, POISON

Regulatory References: 49CFR 172.101; 173.252; 173.3a

International (I.M.O.)

Proper Shipping Name:

Bromine

Hazard Class:

I.M.O. Page: 9760 Packaging Group: I

UN: UN1744

Marine Pollutants: No

Labels: CORROSIVE, POISON Regulatory References: 49CFR 172.102; Part 176; IMO



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SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION (CONTINUED)

AIR (I.C.A.O.)

UN: UN1744

Proper Shipping Name: Bromine

Hazard Class:

Packaging Group: I

Labels: CORROSIVE, POISON

Regulatory References: 49CFR 172.101; 173.6; Part 175; ICAO/IATA

U.S. Customs Harmonization Number: 28013020007

N/A = Not Applicable or Not Available N/E = Not Established

information in this Material Safety Data Sheet meets the requirements of the United States OCCUPATIONAL SAFETY AND HEALTH ACT and regulations promulgated thereunder (29 CFR 1910.1200 et. seq.) and the Canadian WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. This document is intended only as a guide to the appropriate precautionary handling of the material by a person trained in, or supervised by a person trained in, chemical handling. The user is responsible for determining the precautions and dangers of this chemical for his or her particular application. Depending on usage, protective clothing including eye and face guards and respirators must be used to avoid contact with material or breathing chemical vapors/fumes.

Exposure to this product may have serious adverse health effects. This chemical may interact with other substances. Since the potential uses are so varied, Baker cannot warn of all of the potential dangers of use or interaction with other chemicals or materials. Baker warrants that the chemical meets the specifications set forth on the label. BAKER DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS

FOR A PARTICULAR PURPOSE. The user should recognize that this product can cause severe injury and even death, especially if improperly handled or the known dangers of use are not heeded. READ ALL PRECAUTIONARY INFORMATION. As new documented general safety information becomes available, Baker will periodically

revise this Material Safety Data Sheet.

Note: CHEMTREC, CANUTEC, and NATIONAL RESPONSE CENTER emergency telephone no bers are to be used ONLY in the event of CHEMICAL EMERGENCIES involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to Customer Service (1-800-JTBAKER) for assistance.



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Approved by Quality Assurance Department.