



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

MATERIAL SAFETY DATA SHEET

FICHE
SIGNALÉTIQUE

National Response In Canada
CANUTEC 613-996-6666

HOJAS DE DATOS
DE SEGURIDAD

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

Chem

B3905 -04
Effective: 05/01/89

Bromine

Page: 1
Issued: 02/05/91

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

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SECTION I - PRODUCT IDENTIFICATION

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Product Name: Bromine
Common Synonyms: N/A
Chemical Family: Halogens
Formula: Br
Formula Wt.: 79.90
CAS No.: 7726-95-6
NIOSH/RTECS No.: EF9100000
Product Use: Laboratory Reagent
Product Codes: 9764,9760

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PRECAUTIONARY LABELING

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BAKER SAF-T-DATA* System

HEALTH EXTREME	FLAMMABILITY NONE	REACTIVITY SEVERE	CONTACT EXTREME
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Laboratory Protective Equipment

 GOGGLES & SHIELD	 LAB COAT & APRON	 VENT HOOD	 PROPER GLOVES
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U.S. Precautionary Labeling

POISON! DANGER!

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 after 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)

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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
advice.

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

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SECTION II - COMPONENTS

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<u>Component</u>	<u>CAS No.</u>	<u>Weight %</u>	<u>OSHA/PEL</u>	<u>ACGIH/TLV</u>
Bromine	7726-95-6	90-100	0.1 ppm	0.1 ppm

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SECTION III - PHYSICAL DATA

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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
(H₂O=1)

Evaporation Rate: N/A

Solubility(H₂O): 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 IV - FIRE AND EXPLOSION HAZARD DATA

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Flash Point (Closed Cup): N/A NEPA 704M Rating: 4-0-0 OXY

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.

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SECTION V - HEALTH HAZARD DATA

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

Short-Term Exposure Limit (STEL): 2 mg/m³ (0.3 ppm)

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

Toxicity of components

Inhalation Mouse LC₅₀ for Bromine 750 ppm
Carcinogenicity: NTP: No IARC: No Z List: No OSHA Reg: No



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SECTION V - HEALTH HAZARD DATA (CONTINUED)

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



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SECTION V - HEALTH HAZARD DATA (CONTINUED)

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EYE CONTACT: In case of eye contact, immediately flush with plenty of 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

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SECTION VI - REACTIVITY DATA

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Stability: Stable Hazardous Polymerization: Will not occur

Conditions to Avoid: heat, moisture, sunlight

Incompatibles: strong reducing agents, combustible materials, most common metals, potassium, alkalis, organic materials, alcohols, amines and ammonia

Decomposition Products: hydrogen bromide

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SECTION VII - SPILL & DISPOSAL PROCEDURES

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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.)

Disposal Procedure

Dispose in accordance with all applicable federal, state, and local environmental regulations.

EF Hazardous Waste Number: D001, D002 (Ignitable, Corrosive Waste)



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SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT

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Ventilation: 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.

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SECTION IX - STORAGE AND HANDLING PRECAUTIONS

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SPF-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.

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SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

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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: 8
UN: UN1744 Marine Pollutants: No
Labels: CORROSIVE, POISON
Regulatory References: 49CFR 172.102; Part 176; IMO

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



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SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION (CONTINUED)

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AIR (I.C.A.O.)

Proper Shipping Name: Bromine
Hazard Class: 8
UN: UN1744
Labels: CORROSIVE, POISON
Regulatory References: 49CFR 172.101; 173.6; Part 175; ICAO/IATA
Packaging Group: I
U.S. Customs Harmonization Number: 28013020007

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

The 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 numbers 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.