MERCURIC BROMIDE

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
MERCURIC BROMIDE

OTHER NAMES

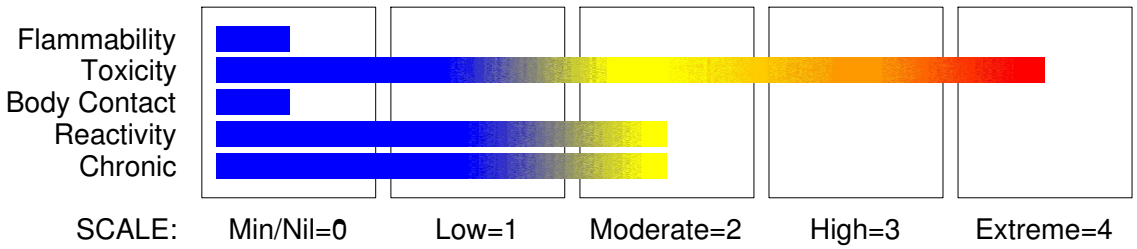
Hg-Br2, "mercury (II) bromide (1:2)", "mercury (II) bromide (1:2)"

PROPER SHIPPING NAME
MERCURY BROMIDES

PRODUCT USE
Used in medicine and photography.

SUPPLIER
Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification
Acute Toxicity (Dermal) Category 1
Acute Toxicity (Inhalation) Category 2
Acute Toxicity (Oral) Category 2
Chronic Aquatic Hazard Category 1
Organ Damage Category 2
Reproductive Toxicity Category 2

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EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H310 H330 H300 H361 H373 H410
Fatal in contact with skin
Fatal if inhaled
Fatal if swallowed
Suspected of damaging the unborn child
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS

Prevention

Wear protective gloves/clothing
Do not get in eyes, on skin or on clothing
Obtain special instructions before use.
Wear respiratory protection.
Do not breathe dust/fume/gas/mist/vapours/spray.
Use only outdoors or in a well ventilated area.
Do not eat, drink or smoke when using this product.
Use personal protective equipment as required.
Do not handle until all safety precautions have been read and understood.
Wash hands thoroughly after handling.

Response

If exposed or concerned: Get medical attention advice.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Keep container tightly closed.
Immediately call a POISON CENTER or doctor/physician.
Get medical advice/attention if you feel unwell.
Specific treatment: refer to Label or MSDS.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
Remove/Take off immediately all contaminated clothing
IF ON SKIN: Gently wash with plenty of soap and water.
Wash/Decontaminate removed clothing before reuse.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
mercuric bromide	7789-47-1	>99

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.
· If swallowed and if more than 15 minutes from a hospital induce vomiting.
· Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
· NOTE: DO NOT INDUCE VOMITING in an unconscious person.
· Always wear protective glove when inducing vomiting by mechanical means.

EYE

If this product comes in contact with the eyes:
· Immediately hold eyelids apart and flush the eye continuously with running water.
· Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
· Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
· Transport to hospital or doctor without delay.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:
· Immediately flush body and clothes with large amounts of water, using safety shower if available.
· Quickly remove all contaminated clothing, including footwear.
· Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
· Transport to hospital, or doctor.

INHALED

· If fumes or combustion products are inhaled remove from contaminated area.
· Lay patient down. Keep warm and rested.
· Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
· Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
· Transport to hospital, or doctor, without delay.

NOTES TO PHYSICIAN

· Moderate adsorption of inorganic mercury compounds through the gastro-intestinal tract (7-15%) is the principal cause of poisoning. These compounds are highly concentrated (as the mercuric (Hg (2+) form) in the kidney; acute ingestion may lead to oliguric renal failure. Severe mucosal necrosis may also result from ingestion.
· Chronic effects range from proteinuria to nephrotic syndrome. Chronic presentation also involves dermatitis, gingivitis, stomatitis, tremor and neuropsychiatric symptoms of erethism.
· Absorbed inorganic mercury does not significantly cross the blood-brain barrier.
· Emesis and lavage should be initiated following acute ingestion.
· Activated charcoal interrupts absorption; cathartics should be administered when charcoal is given.

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· The use of British Anti-Lewisite is indicated in severe inorganic poisoning. Newer derivatives of BAL (e.g. dimercaptosuccinic acid, [DMSA] and 2,3-dimercapto-1 -propanesulfate [DMPS]) may prove more effective. [Ellenhorn and Barceloux: Medical Toxicology]
BIOLOGICAL EXPOSURE INDEX - BEI
These represent the determinants observed in specimens from a healthy worker exposed at the Exposure Standard (ES or TLV).

Determinant	Index	Sampling Time	Comments
1. Total inorganic mercury in urine	35 ug/gm creatinine	Preshift	B
2. Total inorganic mercury in blood	15 ug/L	End of shift at end of workweek	B

B: Background levels occur in specimens collected from subjects NOT exposed.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
· Foam.
· Dry chemical powder.
· BCF (where regulations permit).
· Carbon dioxide.
· Water spray or fog - Large fires only.

FIRE FIGHTING
Alert Fire Brigade and tell them location and nature of hazard.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water courses.
Use fire fighting procedures suitable for surrounding area.
Cool fire exposed containers with water spray from a protected location.
DO NOT approach containers suspected to be hot.
If safe to do so, remove containers from path of fire.
Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD
Pollutant - contain spillage Clear area of personnel and move upwind.
· Non combustible.
· Not considered to be a significant fire risk.
· Heating may cause expansion or decomposition leading to violent rupture of containers.
· May emit corrosive, poisonous fumes.
Decomposes on heating and produces acrid and toxic fumes of: mercury vapour / mercury metal, metal oxides and hydrogen chloride.

FIRE INCOMPATIBILITY
None known.

Personal Protective Equipment
Breathing apparatus.
Gas tight chemical resistant suit.
Limit exposure duration to 1 BA set 30 mins.

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Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

Clean up all spills immediately.
Control personal contact by using protective equipment.
Use dry clean up procedures and avoid generating dust.
Place in suitable containers for disposal.

MAJOR SPILLS

POLLUTANT -contain spillage.
Clear area of personnel and move upwind.
Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water courses.

Shut off all possible sources of ignition and increase ventilation.
Stop leak if safe to do so.
Contain spill with sand, earth or vermiculite.
Use dry clean up procedures and avoid generating dust.
Collect recoverable product into labelled containers for recycling.
Absorb remaining product with sand, earth or vermiculite.
Collect residues and seal in labelled drums for disposal.
DO NOT USE WATER OR NEUTRALISING AGENTS INDISCRIMINATELY ON LARGE SPILLS.
If contamination of drains or waterways occurs, advise emergency services.
After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

X	X	+	X	X	+

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Use good occupational work practice.
Avoid generating and breathing dust.
Avoid contact with skin and eyes.
Wear personal protective equipment when handling.
When handling, DO NOT eat, drink or smoke.
Use in a well-ventilated area Local exhaust ventilation may be required for safe working, i.e. to keep exposures below required standards, otherwise PPE is required.
Avoid contact with incompatible materials.

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Avoid sources of heat.
Handle and open container with care.
Avoid physical damage to containers.
Always wash hands with soap and water after handling. Work clothes should be laundered separately.
Launder contaminated clothing before re-use.

SUITABLE CONTAINER

Packaging as recommended by manufacturer.
· Check that containers are clearly labelled.
Plastic drum or Polyethylene or polypropylene container.
Polylined drum.

STORAGE INCOMPATIBILITY

Segregate from phosphorus, antimony, arsenic, silver salts, alkali metals sulfides, sulfites, phosphates, oxalates, acetylene, ammonia, oxalic acid.

STORAGE REQUIREMENTS

Protect from light.
Observe manufacturer's storing and handling recommendations.
Store in original containers.
Store in a cool, dry and well-ventilated area.
Store away from sources of heat or ignition / naked lights.
Store away from foodstuff containers.
Store away from incompatible materials.
Protect containers against physical damage.
Check regularly for spills and leaks.
Keep containers securely sealed.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records
• mercuric bromide: CAS:7789- 47- 1

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
mercuric bromide	10	

MATERIAL DATA

NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as a Human Carcinogen.
Some jurisdictions require that health surveillance be conducted on occupationally exposed workers. Such surveillance should emphasise
· demography, occupational and medical history and advice
· physical examination with emphasis on neurological, renal and gastrointestinal systems and skin
· urinary inorganic mercury.

PERSONAL PROTECTION

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EYE

· Chemical goggles.
· Full face shield.
· Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

Impervious gloves.
PVC gloves.
Rubber gloves.
Rubber boots.
Safety footwear.

OTHER

· Overalls.
· PVC Apron.
· PVC protective suit may be required if exposure severe.
· Eyewash unit.
· Ensure there is ready access to a safety shower.

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Use in a well-ventilated area.
None required when handling small quantities.
OTHERWISE: Local exhaust ventilation may be required for safe working, i.e. to keep exposures below required standards, otherwise PPE is required.

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

White crystals / powder; slightly soluble in water.
No odour. Soluble in hot alcohol, acetic acid.
Sensitive to light - darkens.

PHYSICAL PROPERTIES

Solid.

Molecular Weight: 360.4
Melting Range (°C): 237
Solubility in water (g/L): Slightly < 1.0%
pH (1% solution): Not available
Volatile Component (%vol): Not available
Relative Vapour Density (air=1): 12.0
Lower Explosive Limit (%): Not applicable
Autoignition Temp (°C): Not applicable
State: Divided solid

Boiling Range (°C): 322
Specific Gravity (water=1): 6.05
pH (as supplied): Not available
Vapour Pressure (kPa): Not available
Evaporation Rate: Non Vol. @ 20 C
Flash Point (°C): Not applicable
Upper Explosive Limit (%): Not applicable
Decomposition Temp (°C): Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of heat source.
Presence of incompatible materials.
Product is considered stable under normal handling conditions.
Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Severely toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 5 gram may be fatal or may produce serious damage to the health of the individual.
Ingestion may result in nausea, abdominal irritation, pain and vomiting.
Symptoms of ingestion within the first few minutes may include pain, profuse vomiting and severe purging and the victim may die within a few hours from peripheral vascular collapse secondary to fluid and electrolyte loss. Primary gastroenteritis may subside spontaneously within a few days but severe haemorrhagic inflammation of the colon (colitis) has occurred as late as 9 days following ingestion. A second phase developing over 1-3 days is characterised by stomatitis (lesions of the mouth parts), membranous colitis and kidney damage (tubular nephritis). This second phase is associated with a slow and prolonged excretion of mercury by salivary glands, the gastrointestinal mucosa and kidneys. Death in this phase usually occurs as a result of kidney failure.

The alimentary effects of many mercury compounds are so rapid that the course and outlook is largely determined by events within the first 5-10 minutes. Acute systemic mercurialism may be lethal within a few minutes or death may be delayed for 5-12 days.

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The ionisable salts are corrosive and tissue damage occurs almost immediately in the mouth, throat and oesophagus.

EYE
Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

SKIN
Skin contact with the material may produce severely toxic effects; systemic effects may result following absorption and these may be fatal.
The material is not thought to be a skin irritant (i.e. is unlikely to produce irritant dermatitis as described in EC Directives using animal models). Temporary discomfort, however, may result from prolonged dermal exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

INHALED
The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation, of the material, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.

CHRONIC HEALTH EFFECTS
Principal routes of exposure are usually by skin contact/absorption and inhalation of generated dust.
In animal tests all forms of mercury have been shown to be teratogenic with mercury ion easily crossing the placental barrier. Chronic exposures in workers may result in excessive salivation (ptyalism), anorexia, digestive disturbances, vague abdominal distress and mild diarrhoea. Renal involvement is rare. Chronic mercurialism manifests itself primarily in neurological effects with the central nervous system the principal target of damage. Tremors involving the hands and fingers and, less often, eyelids, cheeks, tongue and legs, are encountered. Motor control may be impaired resulting in slurred or scanning speech or ataxic gait. Visual and aural disturbance may occur. A common syndrome, described as "erethism," involves behavioral changes such as depression, despondency, and fearfulness. These are often accompanied by insomnia, headache and fatigue. Advanced cases exhibit memory loss, hallucinations and mental deterioration. Other symptoms may include a constant metallic taste and gingivitis of various grades leading to pyorrhea and the loosening of teeth. A dark blue line may occur along the gingival margins and a discolouration of the anterior lens surface (mercurialentis) is considered a useful diagnostic indicator of the chronic condition. Acrodynia ("pink disease") is an uncommon syndrome involving a change in colour of the of the extremities, apathy, anorexia, fever, kidney damage, perspiration, photophobia and insomnia and, most characteristically, pruritic (itchy) scaling of hands and feet.

TOXICITY AND IRRITATION

TOXICITY	IRRITATION
Oral (rat) LD50: 40 mg/kg	Nil Reported
Dermal (rat) LD50: 100 mg/kg	

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Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant:Extreme
Mercury may occur in the environment as free mercury, Hg(0), mercury ions in salts and complexes, Hg+ and (Hg2)2+ and as organic mercury compounds. Each species has its own set of physical, chemical and toxicologic properties.

In natural systems a dynamic equilibrium between soil and water mercury occurs determined largely by the physicochemical and biological conditions which pertain. Mercury ion is transported to aquatic ecosystems via surface run-off and from the atmosphere. It is complexed or tightly bound to both inorganic and organic particles, particularly sediments with high sulfur content. Organic acids such as fulvic and humic acids are often associated with mercury not bound to particles. Methyl mercury is produced by sediment micro-organisms, nonbiologically in sediments and by certain species of fish. The methylation of mercury by micro-organisms is the detoxification response that allows the organism to dispose of the heavy metal ions as small organometallic complexes. Methylation occurs only within a narrow pH range in which the micro-organism might exist and the rate of synthesis depends on the redox potential, composition of the microbial population, availability of Hg2+ and temperature. Vitamin B12 derivatives are thought to be the methylating agents, because they are the only methyl carbanion- or methyl radical -donating coenzymes known. In addition it has been demonstrated that the livers of yellow -fin tuna and albacore produce methyl mercury results in its desorption at relatively high rates thus little methyl mercury is found in sediments. Demethylation by sediment micro-organisms also occurs at a rapid rate compared with methylation. The best conversion rate for inorganic mercury to methyl mercury under ideal conditions is less than 1.5% per month. Methyl mercury released into surface waters may also undergo photodecomposition into mercury.

Methyl mercury can be bioaccumulated by planktonic algae and fish. In fish, the rate of absorption of methyl mercury is faster than that of inorganic mercury and the clearance rate is slower resulting in high concentrations of methyl mercury in muscle tissue. The ratio of organic mercury to total mercury is generally high in fish compared with other aquatic organisms. Selenium which is also present in seawater and other seafoods readily complexes with methyl mercury and is thought to have a protective effect against the toxic action of methyl mercury. The danger of methyl mercury poisoning has been illustrated in Minimata, Japan in the late 1950s following industrial release of mercury into the bay which subsequently resulted in at least 1200 cases of poisoning, some fatal.

Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible.
Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Puncture containers to prevent re-use.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: TOXIC

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HAZCHEM: 2X

UNDG:

Dangerous Goods Class:	6.1	Subrisk:	None
UN Number:	1634	Packing Group:	II

Shipping Name:MERCURY BROMIDES

Air Transport IATA:

ICAO/IATA Class:	6.1	ICAO/IATA Subrisk:	None
UN/ID Number:	1634	Packing Group:	II
ERG Code:	6L		

Shipping name:MERCURY BROMIDES

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	None
UN Number:	1634	Packing Group:	II
EMS Number:	F- A, S- A	Marine Pollutant:	Extreme

Shipping name:MERCURY BROMIDES

Section 15 - REGULATORY INFORMATION

REGULATIONS

mercuric bromide (CAS: 7789-47-1) is found on the following regulatory lists;
Great Lakes Binational Toxics Strategy Substances (U.S. and Canada) - Level I Substances
United Nations List of Prior Informed Consent Chemicals
United Nations List of Prior Informed Consent Chemicals - French
United Nations List of Prior Informed Consent Chemicals - Spanish

Section 16 - OTHER INFORMATION

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 28-Jun-2017