

1,1,2,2-TETRABROMOETHANE

GHS Safety Data Sheet

Version No:3

Page 1 of 11

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

1,1,2,2-TETRABROMOETHANE

OTHER NAMES

C₂H₂-Br₄, "acetylene tetrabromide", "Muthmann's liquid", TBE, tetrabromoacetylene, s-tetrabromoethane, s-tetrabromoethane, "ethane, 1, 1, 2, 2-tetrabromo-", "ethane, 1, 1, 2, 2-tetrabromo-", "[CAS RN 25167-20-8]", "[CAS RN 25167-20-8]"

PROPER SHIPPING NAME

TETRABROMOETHANE

PRODUCT USE

Used to separate minerals by specific gravity; solvent for fats, oils and waxes; fluid in liquid gauges; solvent in microscopy.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.

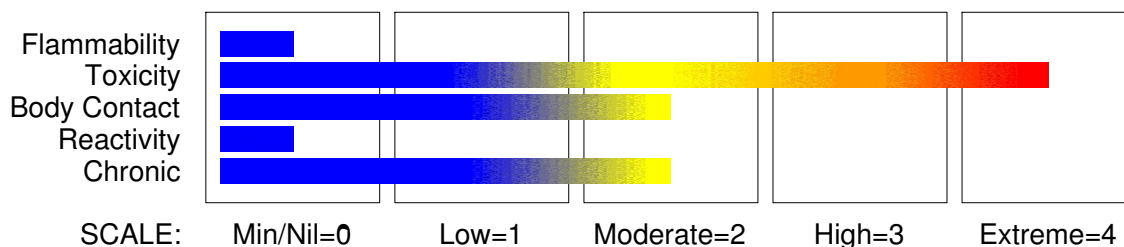
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Inhalation) Category 1

Acute Toxicity (Oral) Category 3

Chronic Aquatic Hazard Category 3

Eye Irritation Category 2A

Respiratory Effects Category 3

continued...

1,1,2,2-TETRABROMOETHANE

GHS Safety Data Sheet

Version No:3

Page 2 of 11

Section 2 - HAZARDS IDENTIFICATION

Skin Corrosion/Irritation Category 3



EMERGENCY OVERVIEW

HAZARD

DANGER

Determined by Chemwatch using GHS criteria:

H336 H330 H301 H316 H319 H412

May cause drowsiness and dizziness

Fatal if inhaled

Toxic if swallowed

Causes mild skin irritation

Causes serious eye irritation

Harmful to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS

Prevention

Wash hands thoroughly after handling.

Do not breathe dust/fume/gas/mist/vapours/spray.

Wear respiratory protection.

Use only outdoors or in a well ventilated area.

Do not eat, drink or smoke when using this product.

Response

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

Keep container tightly closed.

Wear eye/face protection.

If eye irritation persists, get medical advice/attention.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If skin irritation occurs, seek medical advice/attention.

Specific treatment: refer to Label or MSDS.

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

Immediately call a POISON CENTER or doctor/physician.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
tetrabromoethane	79-27-6	100

continued...

1,1,2,2-TETRABROMOETHANE

GHS Safety Data Sheet

Version No:3

Page 3 of 11

Section 4 - FIRST AID MEASURES

SWALLOWED

- For advice, contact a Poisons Information Centre or a doctor at once.
- Urgent hospital treatment is likely to be needed.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Transport to hospital or doctor without delay.

EYE

- If this product comes in contact with the eyes:
- Wash out immediately with fresh 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.
 - If pain persists or recurs seek medical attention.
 - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
 - Flush skin and hair with running water (and soap if available).
 - Seek medical attention in event of irritation.

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.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.

continued...

1,1,2,2-TETRABROMOETHANE

GHS Safety Data Sheet

Version No:3

Page 4 of 11

Section 5 - FIRE FIGHTING MEASURES

- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding area.
- Do not approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

Pollutant.

- Non combustible.
- Not considered to be a significant fire risk.
- Expansion or decomposition on heating may lead to violent rupture of containers.
- Decomposes on heating and may produce toxic fumes of carbon monoxide (CO).
- May emit acrid smoke.

May emit poisonous fumes.

Personal Protective Equipment

Gas tight chemical resistant suit.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable labelled container for waste disposal.

MAJOR SPILLS

Environmental hazard - 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 course.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Neutralise/decontaminate residue.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:
tetrabromoethane 8 ppm

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

continued...

1,1,2,2-TETRABROMOETHANE

GHS Safety Data Sheet

Version No:3

Page 5 of 11

Section 6 - ACCIDENTAL RELEASE MEASURES

tetrabromoethane 5 ppm

other than mild, transient adverse effects without perceiving a clearly defined odour is:

tetrabromoethane 1.25 ppm

The threshold concentration below which most people will experience no appreciable risk of health effects:

tetrabromoethane 1 ppm

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	$\geq 0.1\%$	Toxic (T)	$\geq 3.0\%$
R50	$\geq 0.25\%$	Corrosive (C)	$\geq 5.0\%$
R51	$\geq 2.5\%$		
else	$\geq 10\%$		

where percentage is percentage of ingredient found in the mixture

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

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- 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.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

Glass container.

- Metal can or drum
- Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

Avoid storage with lithium, or strong caustics.

Softens or destroys most plastics and rubbers.

STORAGE REQUIREMENTS

DO NOT store above 50 deg. C.

DO NOT use aluminium or galvanised containers.

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.

continued...

1,1,2,2-TETRABROMOETHANE

GHS Safety Data Sheet

Version No:3

Page 6 of 11

Section 7 - HANDLING AND STORAGE

- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific precautions

X: Must not be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- tetrabromoethane: CAS:79- 27- 6 CAS:25167- 20- 8

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
tetrabromoethane		8

MATERIAL DATA

Odour readily apparent and objectionable at concentrations greater than 1 to 2 ppm.

It is recognised that the present recommendation for the TLV-TWA may not protect the worker from possible mutagenic and carcinogenic effects thought to be associated with exposure to tetrabromoethane. Until more evidence is obtained workers exposed to concentrations approaching 1 ppm should be kept under medical surveillance.

A skin notation acknowledges percutaneous absorption in sufficient quantities to produce systemic effects.

PERSONAL PROTECTION



EYE

- Safety glasses with side shields
- Chemical goggles.
- 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,

continued...

1,1,2,2-TETRABROMOETHANE

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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

Nitrile gloves.

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

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	A- AUS	-
1000	50	-	A- AUS
5000	50	Airline *	-
5000	100	-	A- 2
10000	100	-	A- 3
	100+		Airline**

* - Continuous Flow

** - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.

An approved self contained breathing apparatus (SCBA) may be required in some situations. Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:
solvent, vapours, degreasing etc., evaporating from tank (in still air).

aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)

direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of

Air Speed:

0.25- 0.5 m/s (50- 100 f/min.)

0.5- 1 m/s (100- 200 f/min.)

1- 2.5 m/s (200- 500 f/min.)

continued...

1,1,2,2-TETRABROMOETHANE

GHS Safety Data Sheet

Version No:3

Page 8 of 11

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

rapid air motion)
grinding, abrasive blasting, tumbling, high
speed wheel generated dusts (released at high
initial velocity into zone of very high rapid
air motion).

2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range

1: Room air currents minimal or favourable to
capture

2: Contaminants of low toxicity or of nuisance
value only.

3: Intermittent, low production.

4: Large hood or large air mass in motion

Upper end of the range

1: Disturbing room air currents

2: Contaminants of high toxicity

3: High production, heavy use

4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Heavy yellowish liquid with a sweet chloroform-like odour.
Immiscible with water, miscible with alcohol and ether.

PHYSICAL PROPERTIES

Liquid.

Does not mix with water.

Sinks in water.

Toxic or noxious vapours/gas.

Molecular Weight: 345.68

Melting Range (°C): 0.1

Solubility in water (g/L): Immiscible

pH (1% solution): Not applicable.

Volatile Component (%vol): 100

Relative Vapour Density (air=1): 11.9

Lower Explosive Limit (%): Not applicable

Autoignition Temp (°C): 335

State: Liquid

Boiling Range (°C): 239

Specific Gravity (water=1): 2.96

pH (as supplied): Not applicable

Vapour Pressure (kPa): 0.013 @ 20 °C

Evaporation Rate: >1 BuAc=1

Flash Point (°C): Not applicable

Upper Explosive Limit (%): Not applicable

Decomposition Temp (°C): Not available

Viscosity: Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.

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1,1,2,2-TETRABROMOETHANE

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

- Hazardous polymerisation will not occur.
Presence of elevated temperatures.
-

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

EYE

Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals.

Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

Toxic effects may result from skin absorption.

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

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.

Acute intoxication by halogenated aliphatic hydrocarbons appears to take place over two stages. Signs of a reversible narcosis are evident in the first stage and in the second stage signs of injury to organs may become evident, a single organ alone is (almost) never involved.

Depression of the central nervous system is the most outstanding effect of most halogenated aliphatic hydrocarbons. Inebriation and excitation, passing into narcosis, is a typical reaction. In severe acute exposures there is always a danger of death from respiratory failure or cardiac arrest due to a tendency to make the heart more susceptible to catecholamines (adrenalin).

In the case of iodised and brominated compounds, exposure effects cannot be described by simple central nervous system depression produced by other halogenated aliphatic hydrocarbons. Headache, nausea, ataxia (loss of muscle co-ordination), tremors, speech difficulties, visual disturbances, convulsions, paralysis, delirium, mania and apathy are all evidence of additional effects.

1,1,2,2-TETRABROMOETHANE

Section 11 - TOXICOLOGICAL INFORMATION

CHRONIC HEALTH EFFECTS

Principal routes of exposure are by accidental skin and eye contact and by inhalation of vapours especially at higher temperatures.

The material may accumulate in the human body and progressively cause tissue damage.

Chronic exposures may result in kidney and liver damage.

Recent cases have cast doubt on the safety of a TLV of 1 ppm. Workers

exposed to levels near the TLV should be closely monitored until more information has been obtained.

Individuals should have a preplacement and annual physical examination stressing liver function.

TOXICITY AND IRRITATION

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY

Oral (rat) LD50: 1200 mg/kg

Inhalation (rat) LC50: 549 mg/m³/4h

Dermal (rat) LD50: 5250 mg/kg

Oral (mouse) LD50: 269 mg/kg

Oral (rabbit) LD50: 400 mg/kg

General anaesthesia, liver degeneration, haemorrhage recorded.

IRRITATION

Skin (rabbit): 500 mg/24h- Moderate

Eye (rabbit): 100 mg - Mild

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant:Yes

Half-life (hr) air: 1340

BCF: 97

The material evaporates from soil. In water the material is expected to have a half-life of less than 1 day. No significant degree of bioaccumulation is expected.

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- Recycle containers if possible, or dispose of in an authorised landfill.

WASTE DISPOSAL PROCEDURES

- Collect and package recoverable quantities of acetylene tetrabromide for incineration [Armour 1996].

SPILLAGE DISPOSAL

- Wear nitrile rubber gloves, protective clothing and self contained breathing apparatus to control personal contact acetylene tetrabromide. Cover and contain the spill with a 1:1:1 mixture by weight of sodium carbonate, bentonite and sand. Once all of the liquid has been absorbed, collect the mixture in a container. Package and label for incineration [Armour 1996].

Section 14 - TRANSPORTATION INFORMATION

1,1,2,2-TETRABROMOETHANE

GHS Safety Data Sheet

Version No:3

Page 11 of 11

Section 14 - TRANSPORTATION INFORMATION



Labels Required: TOXIC
HAZCHEM: 2[Z]

UNDG:

Dangerous Goods Class: 6.1
UN Number: 2504
Shipping Name: TETRABROMOETHANE

Subrisk: None
Packing Group: III

Air Transport IATA:

ICAO/IATA Class: 6.1
UN/ID Number: 2504
Special provisions: None
Shipping Name: TETRABROMOETHANE

ICAO/IATA Subrisk: None
Packing Group: III

Maritime Transport IMDG:

IMDG Class: 6.1
UN Number: 2504
EMS Number: F- A, S- A
Marine Pollutant: Yes
Shipping Name: TETRABROMOETHANE

IMDG Subrisk: None
Packing Group: III
Special provisions: None

Section 15 - REGULATORY INFORMATION

REGULATIONS

No regulations applicable
No data available for tetrabromoethane as CAS: 79-27-6, CAS: 25167-20-8.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
tetrabromoethane	79- 27- 6, 25167- 20- 8

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: 17-Jun-2018