



HYDROBROMIC ACID ABT.48%

GHS Safety Data Sheet

Version No:2.0

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

HYDROBROMIC ACID ABT 48%

OTHER NAMES

HBr, "aqueous hydrogen bromide", "hydrogen bromide, aqueous", "hydrobromic acid 48%"

PROPER SHIPPING NAME

HYDROBROMIC ACID

PRODUCT USE

The concentrated acid is used principally in analytical chemistry and manufacture of inorganic and some alkyl bromides; used as an alkylation catalyst. Solvent for ore minerals.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

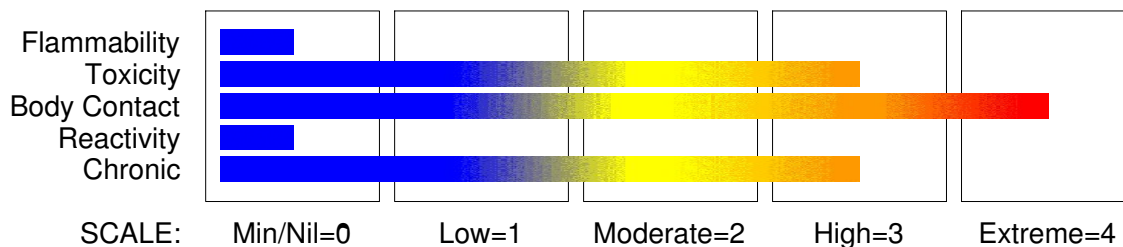
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Inhalation) Category 2

continued...

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Section 2 - HAZARDS IDENTIFICATION

Metal Corrosion Category 1
Reproductive Toxicity Category 1B
Skin Corrosion/Irritation Category 1B



EMERGENCY OVERVIEW

HAZARD

DANGER

Determined by using GHS criteria:

H330 H360 H290 H314

Fatal if inhaled

May damage the unborn child

May be corrosive to metals

Causes severe skin burns and eye damage

PRECAUTIONARY STATEMENTS

Prevention

Wear respiratory protection.

Wear protective gloves/clothing and eye/face protection.

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

Use only outdoors or in a well ventilated area.

Wash thoroughly after handling.

Do not handle until all safety precautions have been read and understood.

Use personal protective equipment as required.

Do not breathe dust or mist.

Obtain special instructions before use.

Response

Wash contaminated clothing before reuse.

Absorb spillage to prevent material damage.

Specific treatment: refer to Label or MSDS.

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

If exposed or concerned: Get medical attention advice.

If on skin or hair: remove/take off immediately all contaminated clothing. Rinse with water/shower.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Keep container tightly closed.

Immediately call a POISON CENTER or doctor/physician.

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

Storage

Store locked up.

Store in a corrosive resistant container with a resistant liner.

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Section 2 - HAZARDS IDENTIFICATION

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
hydrogen bromide	10035-10-6	47-49
water	7732-18-5	51-53

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.

- 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.
- Seek medical advice.

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.

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Section 4 - FIRST AID MEASURES

NOTES TO PHYSICIAN

Treatment of intoxication by the bromide ion includes hydration, the maintenance of mild water diuresis, and sodium, or even better, ammonium chloride (10-15 gm. daily in divided doses) with an osmotic or high ceiling diuretic. Haemodialysis may be of value. [GOSSELIN, SMITH, HODGE: Clinical Toxicology of Commercial Products]

In acute poisoning the stomach should be emptied by aspiration and lavage and sodium chloride given by intravenous infusion. Dextrose has also been administered and frusemide may be given to aid diuresis. In severe cases of bromide intoxication or when usual treatments cannot be used haemodialysis or peritoneal dialysis may be of value.

[MARTINDALE: The Extra Pharmacopoeia].

For acute or short term repeated exposures to strong acids:

- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

INGESTION:

- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
- Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
- Charcoal has no place in acid management.
- Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

- Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. DO NOT use neutralising agents or any other additives. Several litres of saline are required.
- Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

[Ellenhorn and Barceloux: Medical Toxicology].

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- There is no restriction on the type of extinguisher which may be used.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

- Wear full body protective clothing with breathing apparatus.

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Section 5 - FIRE FIGHTING MEASURES

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

FIRE/EXPLOSION HAZARD

- Non combustible.
 - Not considered to be a significant fire risk.
 - Acids may react with metals to produce hydrogen, a highly flammable and explosive gas.
 - Heating may cause expansion or decomposition leading to violent rupture of containers.
 - Decomposes on heating and may produce toxic fumes of carbon monoxide (CO).
 - May emit acid smoke.
 - May emit corrosive fumes.
- Combustion products include: hydrogen bromide.

Personal Protective Equipment

Breathing apparatus.
Chemical splash suit.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

Environmental hazard - contain spillage.
Clean up all spills immediately.
Wear protective clothing, impervious gloves and safety glasses.
Avoid breathing vapours and contact with skin and eyes.
Contain spill with sand, earth or vermiculite.
Use soda ash or slaked lime to neutralise.
Recover liquid and place in labelled, sealable container.
Collect residues and seal in labelled drums for disposal.
Wash area down with large quantity of water and prevent runoff into drains.

MAJOR SPILLS

Alert Fire Brigade and tell them location and nature of hazard.
Pollutant - contain spillage.
Clear area of personnel and move upwind.

- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water courses.

Increase ventilation.
Stop leak if safe to do so.
Contain spill with sand, earth or vermiculite.
Use soda ash or slaked lime to neutralise.
Recover liquid and place in labelled, sealable container.
Collect residues and seal in labelled drums for disposal.
Wash area down with large quantity of water and prevent runoff into drains.
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.

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Section 6 - ACCIDENTAL RELEASE MEASURES

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:

hydrobromic acid 30 ppm

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

hydrobromic acid 3 ppm

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

hydrobromic acid 3 ppm

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

hydrobromic acid 3 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

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific precautions

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

HIGHLY CORROSIVE.

Use good occupational work practice.

Avoid breathing vapours and contact with skin and eyes.

Avoid contact with incompatible materials.

Avoid physical damage to containers.

Wear personal protective equipment when handling.

Handle and open container with care.

When handling, DO NOT eat, drink or smoke.

Use in a well-ventilated area.

Keep containers securely sealed when not in use.

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Section 7 - HANDLING AND STORAGE

WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.

Decant in a well-ventilated area or under an exhaust hood.

Always wash hands with soap and water after handling. Work clothes should be laundered separately.

SUITABLE CONTAINER

- Check that containers are clearly labelled.

Glass container.

Glass carboy.

Polyethylene or polypropylene container.

Polylined drum.

STORAGE INCOMPATIBILITY

Avoid reaction with oxidising agents.

Avoid storage with reducing agents.

Segregate from fluorine, ammonia, ozone, ferric oxide, alkalis.

Avoid contact with metals.

STORAGE REQUIREMENTS

Observe manufacturer's storing and handling recommendations.

Store in a cool, dry place.

Store in a cool area and away from sunlight.

Store in a well-ventilated area.

Store away from incompatible materials.

Store in a banded area.

Protect containers against physical damage.

Keep containers securely sealed.

Check regularly for spills and leaks.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• hydrobromic acid:	CAS:10035- 10- 6
• hydrogen bromide:	CAS:62140- 56- 1 CAS:10035- 10- 6
• water:	CAS:7732- 18- 5 CAS:558440- 53- 2 CAS:558440- 22- 5

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
hydrobromic acid		30
hydrogen bromide		30

ODOUR SAFETY FACTOR (OSF)

OSF=1 (HYDROGEN BROMIDE)

Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.

Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.

The Odour Safety Factor (OSF) is defined as:

OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

MATERIAL DATA

None assigned. Refer to individual constituents.

INGREDIENT DATA

HYDROGEN BROMIDE:

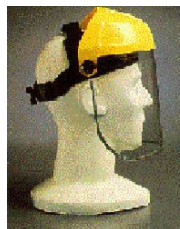
Hydrogen bromide is a primary irritant which produce no known chronic effects. Accordingly a ceiling value is recommended and is based on the results of controlled exposures of human volunteers. Exposure at or below this value is thought to minimise even transient irritation and complaints which decrease work efficiency. There is no indication that even brief, small excursions above the ceiling are life-threatening or have the potential to create permanent harm.

Subjective responses from 6 volunteers indicate that 5 ppm caused nose and throat irritation in the majority but it was considered unlikely that noticeable disturbances will occur if peak concentrations exceed this value for brief periods.

WATER:

No exposure limits set by NOHSC or ACGIH.

PERSONAL PROTECTION



OR

EYE

- Chemical goggles.
- Full face shield.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

· 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

Nitrile gloves.
Neoprene gloves.
Protective footwear.

OTHER

· Eyewash unit.
· Full protective suit.
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	B- AUS P	-
1000	50	-	B- AUS P
5000	50	Airline *	-
5000	100	-	B- 2 P
10000	100	-	B- 3 P
	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 your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

SAA approved acid-vapour respirator or full-face air supplied breathing apparatus.
Provide adequate ventilation in warehouse or closed storage areas.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Clear, colourless to slightly yellow fuming liquid which darkens slowly on exposure to air and light due to formation of bromine.

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

The liquid is strongly acidic and has an acrid odour.
Miscible in water and alcohol.
A saturated aqueous solution; at 0 C. contains 68.85% hydrogen bromide;
at 25 C. contains 66% hydrogen bromide.
When hydrobromic acid solutions are distilled a 'constant boiling' acid
containing about 47.5% hydrogen bromide remains which distills unchanged
at 126 C.

PHYSICAL PROPERTIES

Liquid.
Mixes with water.
Corrosive.
Acid.
Toxic or noxious vapours/gas.

Molecular Weight: 80.91
Melting Range (°C): - 11
Solubility in water (g/L): Miscible
pH (1% solution): Not available.
Volatile Component (%vol): 100
Relative Vapour Density (air=1): 2.8
Lower Explosive Limit (%): Not available.
Autoignition Temp (°C): Not available.
State: Liquid

Boiling Range (°C): 124
Specific Gravity (water=1): 1.49 at 25 C.
pH (as supplied): Not available
Vapour Pressure (kPa): 0.507
Evaporation Rate: Not available
Flash Point (°C): Non- flammable.
Upper Explosive Limit (%): Not available.
Decomposition Temp (°C): Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual.
The material can produce severe chemical burns within the oral cavity and
gastrointestinal tract following ingestion.

EYE

The material can produce severe chemical burns to the eye following direct contact.
Vapours or mists may be extremely irritating.
When applied to the eye(s) of animals, the material produces severe ocular lesions which
are present twenty-four hours or more after instillation.
The vapour is highly discomforting.
The material may produce moderate eye irritation leading to inflammation. Repeated or

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Section 11 - TOXICOLOGICAL INFORMATION

prolonged exposure to irritants may produce conjunctivitis.

SKIN

Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

The material can produce severe chemical burns following direct contact with the skin.

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

Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system in a substantial number of individuals following inhalation.

Inhalation of quantities of liquid mist may be extremely hazardous, even lethal due to spasm, extreme irritation of larynx and bronchi, chemical pneumonitis and pulmonary oedema.

The material may produce respiratory tract irritation. Symptoms of pulmonary irritation may include coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and a burning sensation.

Unlike most organs, the lung can respond to a chemical insult or a chemical agent, by first removing or neutralising the irritant and then repairing the damage (inflammation of the lungs may be a consequence).

The repair process (which initially developed to protect mammalian lungs from foreign matter and antigens) may, however, cause further damage to the lungs (fibrosis for example) when activated by hazardous chemicals. Often, this results in an impairment of gas exchange, the primary function of the lungs. Therefore prolonged exposure to respiratory irritants may cause sustained breathing difficulties.

CHRONIC HEALTH EFFECTS

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

Chronic intoxication with ionic bromides, historically, has resulted from medical use of bromides but not from environmental or occupational exposure; depression, hallucinosis, and schizophreniform psychosis can be seen in the absence of other signs of intoxication. Bromides may also induce sedation, irritability, agitation, delirium, memory loss, confusion, disorientation, forgetfulness (aphasias), dysarthria, weakness, fatigue, vertigo, stupor, coma, decreased appetite, nausea and vomiting, diarrhoea, hallucinations, an acne like rash on the face, legs and trunk (seen in 25-30% of case involving bromide ion), and a profuse discharge from the nostrils (coryza). Ataxia and generalised hyperreflexia have also been observed. Correlation of neurologic symptoms with blood levels of bromide is inexact. The use of substances such as brompheniramine, as antihistamines, largely reflect current day usage of bromides; ionic bromides have been largely withdrawn from therapeutic use due to their toxicity. Several cases of foetal abnormalities have been described in mothers who took large doses of bromides during pregnancy.

TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

HYDROGEN BROMIDE:

TOXICITY

Inhalation (rat) LC50: 2858 ppm/1h.

IRRITATION

Nil Reported

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Section 11 - TOXICOLOGICAL INFORMATION

WATER:

No significant acute toxicological data identified in literature search.

Section 12 - ECOLOGICAL INFORMATION

No data for hydrobromic acid.

Section 13 - DISPOSAL CONSIDERATIONS

Consult State Land Waste Management Authority for disposal.
Treat and neutralise at an effluent treatment plant.
Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION



Labels Required: CORROSIVE
HAZCHEM: 2R

UNDG:

Dangerous Goods Class: 8
UN Number: 1788
Shipping Name: HYDROBROMIC ACID

Subrisk: None
Packing Group: II

Air Transport IATA:

ICAO/IATA Class: 8
UN/ID Number: 1788
ERG Code: 8L
Shipping name: HYDROBROMIC ACID

ICAO/IATA Subrisk: None
Packing Group: II

Maritime Transport IMDG:

IMDG Class: 8
UN Number: 1788
EMS Number: F- A, S- B
Shipping name: HYDROBROMIC ACID

IMDG Subrisk: None
Packing Group: II

Section 15 - REGULATORY INFORMATION

REGULATIONS

hydrobromic acid (CAS: 10035-10-6) is found on the following regulatory lists;

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Section 15 - REGULATORY INFORMATION

International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
hydrogen bromide	62140- 56- 1, 10035- 10- 6
water	7732- 18- 5, 558440- 53- 2, 558440- 22- 5

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: 5-Apr-2018