SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

<table>
<thead>
<tr>
<th>Product name</th>
<th>TETRAETHYLAMMONIUM BROMIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name</td>
<td>tetraethylammonium bromide</td>
</tr>
<tr>
<td>Chemical English Name</td>
<td>tetraethylammonium bromide</td>
</tr>
<tr>
<td>Synonyms</td>
<td>(C2H4)4Br, Beparon, C8-H20-Br-N, Etambro, Elyton, N,N,N-triethyllethanaminium bromide, Sympatektoman, TEA bromide, TEAB, TETRAETHYLAMMONIUM BROMIDE, USAF DO-32, ammonium, tetraethyl-, bromide, ethanaminium, N,N,N-triethyl-, bromide, quaternary ammonium compound, tetraethyl ammonium bromide, tetrylammonium bromide</td>
</tr>
<tr>
<td>Proper shipping name</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>C8H20N.Br</td>
</tr>
<tr>
<td>Other means of identifications</td>
<td>Not Available</td>
</tr>
<tr>
<td>CAS number</td>
<td>71-91-0</td>
</tr>
</tbody>
</table>

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: An anti-hypertensive agent; acts by blocking voltage-dependent potassium channels in excitable tissue.

Details of the manufacturer/importer

<table>
<thead>
<tr>
<th>Registered company name</th>
<th>ANPEL Laboratory Technologies (Shanghai) Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>No.260 Pu Ting Road, Song Jiang District, Shanghai China</td>
</tr>
<tr>
<td>Telephone</td>
<td>021-54890099</td>
</tr>
<tr>
<td>Fax</td>
<td>021-54248311</td>
</tr>
<tr>
<td>Website</td>
<td><a href="http://www.anpel.com.cn">www.anpel.com.cn</a></td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:shapel@anpel.com.cn">shapel@anpel.com.cn</a></td>
</tr>
</tbody>
</table>

Emergency telephone number

<table>
<thead>
<tr>
<th>Association / Organisation</th>
<th>Not Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency telephone numbers</td>
<td>021-57818692</td>
</tr>
<tr>
<td>Other emergency telephone numbers</td>
<td>021-57818692</td>
</tr>
</tbody>
</table>

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

<table>
<thead>
<tr>
<th>SUMMARY OF HAZARD IN AN EMERGENCY SITUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid.</td>
</tr>
<tr>
<td>Mixes with water.</td>
</tr>
<tr>
<td>Combustible.</td>
</tr>
<tr>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>Iritating to eyes, respiratory system and skin.</td>
</tr>
<tr>
<td>Toxic to aquatic organisms. Use appropriate container to avoid environmental contamination.</td>
</tr>
</tbody>
</table>

GHS Classification

### GHS label elements

<table>
<thead>
<tr>
<th>SIGNAL WORD</th>
<th>WARNING</th>
</tr>
</thead>
</table>

### Hazard statement(s)

<table>
<thead>
<tr>
<th>Hazard statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H302 Property: Harmful if swallowed</td>
</tr>
<tr>
<td>H315 Property: Causes skin irritation</td>
</tr>
<tr>
<td>H319 Property: Causes serious eye irritation</td>
</tr>
<tr>
<td>H335 Property: May cause respiratory irritation</td>
</tr>
<tr>
<td>H401 Property: Toxic to aquatic life</td>
</tr>
</tbody>
</table>

### Precautionary statement(s) Prevention

<table>
<thead>
<tr>
<th>Precautionary statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P271 Use only outdoors or in a well-ventilated area.</td>
</tr>
<tr>
<td>P261 Avoid breathing dust/fume/gas/mist/vapours/spray.</td>
</tr>
<tr>
<td>P270 Do not eat, drink or smoke when using this product.</td>
</tr>
<tr>
<td>P273 Avoid release to the environment.</td>
</tr>
<tr>
<td>P280 Wear protective gloves/protective clothing/eye protection/face protection.</td>
</tr>
</tbody>
</table>

### Precautionary statement(s) Response

<table>
<thead>
<tr>
<th>Precautionary statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>P337+P313 IF eye irritation persists: Get medical advice/attention.</td>
</tr>
<tr>
<td>P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider/otherwise get medical advice/attention (if you feel unwell).</td>
</tr>
<tr>
<td>P302+P352 IF ON SKIN: Wash with plenty of water and soap</td>
</tr>
<tr>
<td>P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.</td>
</tr>
<tr>
<td>P330 Rinse mouth.</td>
</tr>
<tr>
<td>P332+P313 IF skin irritation occurs: Get medical advice/attention.</td>
</tr>
<tr>
<td>P362+P364 Take off contaminated clothing and wash it before reuse.</td>
</tr>
</tbody>
</table>

### Precautionary statement(s) Storage

<table>
<thead>
<tr>
<th>Precautionary statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P405 Store locked up.</td>
</tr>
<tr>
<td>P403+P233 Store in a well-ventilated place. Keep container tightly closed.</td>
</tr>
</tbody>
</table>

### Precautionary statement(s) Disposal

<table>
<thead>
<tr>
<th>Precautionary statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P501 Dispose of contents/container to authorised chemical landfill or if organic to high temperature incineration</td>
</tr>
</tbody>
</table>

### Physical and Chemical Hazard

<table>
<thead>
<tr>
<th>Physical and Chemical Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid.</td>
</tr>
<tr>
<td>Mixes with water.</td>
</tr>
<tr>
<td>Combustible.</td>
</tr>
<tr>
<td>Toxic smoke/fumes in a fire.</td>
</tr>
</tbody>
</table>

### Health Hazards

<table>
<thead>
<tr>
<th>Health Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inhaled</strong></td>
</tr>
<tr>
<td>Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and allergens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ingestion</strong></td>
</tr>
<tr>
<td>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. So-called anticholinergic (parasympatholytic) agents (such as atropine, belladonna alkaloids) block cholinergic effects produced by activation of both muscarinic and nicotinic receptors. Clinical effects of these agents include elevated blood pressure and temperature, erythema, delirium and mydriasis (all of which are also produced by sympathomimetic agents) and in addition, silent bowel sounds and dry skin. The most common adverse events reported by patients receiving anticholinergics are dry mouth, headache, constipation, vertigo/dizziness, and abdominal pain. Xerostomia (dry mouth), constipation, abnormal vision (accommodation abnormalities, blurred vision, photo phobia) due to dilatation of the pupils (mydriasis), urinary retention, cystopygia (paralysis of the urinary bladder), increased ocular tension; tachycardia; palpitation; decreased sweating, loss of taste, nervousness, drowsiness, weakness, dizziness, insomnia, vomiting, impotence, suppression of lactation, constipation, bloated feeling, a degree of mental confusion or excitement (especially in the elderly) and xerophthalmia (dry eye syndrome) are expected side effects of anticholinergic agents. In addition, in the presence of fever, high environmental temperature and/or during physical exercise, heat prostration can occur with use of anticholinergic agents (due to decreased sweating), particularly in children and the elderly.</td>
</tr>
</tbody>
</table>

Continued...
Severe allergic reactions including anaphylactic/anaphylactoid reactions; hypersensitivity; urticaria, pruritus, dry skin, and other dermatological manifestations may also result. When a significant amount of an anticholinergic is taken into the body, a toxic reaction known as acute anticholinergic syndrome may result. This may happen accidentally or intentionally as a consequence of recreational drug use. Anticholinergic drugs are usually considered the least enjoyable by experienced recreational drug users, possibly due to the lack of euphoria caused by them. The risk of addiction is low in the anticholinergic class. The effects are usually more pronounced in the elderly, due to natural reduction of acetylcholine production associated with age.

Possible effects of anticholinergics include:
- Axonia; loss of coordination; decreased mucus production in the nose and throat; consequent dry, sore throats; tachycardia or dry mouth with possible acceleration of caries; cessation of perspiration; consequent decreased epidermal thermal dissipation leading to warm, blotchy, or red skin; increased body temperature; pupil dilatation (mydriasis); consequent sensitivity to bright light (photophobia); loss of accommodation (loss of focusing ability, blurred vision); double vision (diplopia); increased heart rate (tachycardia); easily startled; urinary retention; diminished bowel movement, sometimes ileus; increased intracranial pressure, dangerous for people with narrow-angle glaucoma; shaking

Possible effects in the central nervous system resemble those associated with delirium, and may include:
- Confusion; disorientation; agitation; euphoria or dysphoria; respiratory depression; memory problems; inability to concentrate; wandering thoughts; inability to sustain a train of thought; incoherent speech; wakeful myoclonic jerking; unusual sensitivity to sudden sounds; illogical thinking; phobias; visual disturbances; periodic flashes of light; periodic changes in visual field; visual snow; restricted or "tunnel vision"; visual, auditory, or other sensory hallucinations; warping or waving of surfaces and edges; textured surfaces; "dancing" lines; "spiders"; insects; lifelike objects indistinguishable from reality; hallucinated presence of people not actually there; rarely: seizures, coma and death

Acute anticholinergic syndrome is completely reversible and subsides once all of the toxin has been excreted. Ordinarily, no specific treatment is indicated. However, in extreme cases, especially those that involve severe distortions of mental state, a reversible cholinergic agent such as physostigmine may be used...

Quaternary ammonium anticholinergic agents usually exhibit some ganglion-blocking activity so that high doses may produce postural hypotension and impotence. Toxic doses may produce non-polarising neuromuscular block.

**Skin Contact**
Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.

The material may accentuate any pre-existing dermatitis condition

Open cuts, abraded or irritated skin should not be exposed to this material

Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

**Eye**
When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation.

**Chronic**
Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

There is some evidence that human exposure to the material may result in developmental toxicity. This evidence is based on animal studies where effects have been observed in the absence of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not secondary non-specific consequences of the other toxic effects.

Chronic intoxication with ionic bromides, historically, has resulted from medical use of bromides but not from environmental or occupational exposure; depression, hallucinosis, and schizophrenia 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), drowsiness, weakness, fatigue, vertigo, stupor, coma, decreased appetite, nausea and vomiting, diarrhoea, hallucinations, an acne like rash on the face, legs and trunk, known as bromoderma (seen in 25-30% of cases involving bromide ion), and a profuse discharge from the nostrils (conyza). Axatia and generalised hyperreflexia have also been observed. Correlation of neurologic symptoms with blood levels of bromide is ineffect. 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.

In test animals, brominated vegetable oils (BVOs), historically used as emulsifiers in certain soda-based soft drinks, produced damage to the heart and kidneys in addition to increasing fat deposits in these organs. In extreme cases BVO caused testicular damage, stunted growth and produced lethargy and fatigue.

Brominism produces slurred speech, apathy, headache, decreased memory, anorexia and drowsiness, psychosis resembling paranoid schizophrenia, and personality changes

Several cases of foetal abnormalities have been described in mothers who took large doses of bromides during pregnancy.

Reproductive effects caused by bromide (which crosses the placenta) include central nervous system depression, brominism, and bromoderma in the newborn.

Long term exposure to high dust concentrations may cause changes in lung function (i.e. pneumoconiosis) caused by particles less than 0.5 micron penetrating and remaining in the lung. A prime symptom is breathlessness. Lung shadows show on X-ray.

**Environmental Hazards**
Toxic to aquatic organisms. Use appropriate container to avoid environmental contamination.

**Other hazards**
Cumulative effects may result following exposure*. Eye contact may produce serious damage*. May be harmful to the foetus/ embryo*.
### SECTION 4 FIRST AID MEASURES

**Description of first aid measures**

<table>
<thead>
<tr>
<th><strong>Eye Contact</strong></th>
<th>If this product comes in contact with the eyes:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>➢ Immediately hold eyelids apart and flush the eye continuously with running water.</td>
</tr>
<tr>
<td></td>
<td>➢ 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.</td>
</tr>
<tr>
<td></td>
<td>➢ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</td>
</tr>
<tr>
<td></td>
<td>➢ Transport to hospital or doctor without delay.</td>
</tr>
<tr>
<td></td>
<td>➢ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Skin Contact</strong></th>
<th>If skin contact occurs:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>➢ Immediately remove all contaminated clothing, including footwear.</td>
</tr>
<tr>
<td></td>
<td>➢ Flush skin and hair with running water (and soap if available).</td>
</tr>
<tr>
<td></td>
<td>➢ Seek medical attention in event of irritation.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th><strong>Ingestion</strong></th>
<th>If swallowed, refer for medical attention, where possible, without delay.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>➢ For advice, contact a Poisons Information Centre or a doctor.</td>
</tr>
<tr>
<td></td>
<td>➢ Urgent hospital treatment is likely to be needed.</td>
</tr>
<tr>
<td></td>
<td>➢ In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.</td>
</tr>
<tr>
<td></td>
<td>➢ If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.</td>
</tr>
<tr>
<td></td>
<td>➢ If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.</td>
</tr>
</tbody>
</table>

Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

➢ INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

**Note:** Wear a protective glove when inducing vomiting by mechanical means.

**Advises for rescue team (PPE requirement for rescue personnel)**

➢ Clean up waste regularly and abnormal spills immediately.

➢ Avoid breathing dust and contact with skin and eyes.

➢ Wear protective clothing, gloves, safety glasses and dust respirator.

➢ Use dry clean up procedures and avoid generating dust.

➢ Vacuum up or sweep up. **Note:** Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).

➢ Dampen with water to prevent dusting before sweeping.

➢ Place in suitable containers for disposal.

**Indication of any immediate medical attention and special treatment needed**

**Treatment regime for atropine intoxication (and for other anticholinergic):**

➢ Empty the stomach by aspiration and lavage.

➢ The use of charcoal to prevent absorption, followed by lavage has been suggested.

➢ Give a purgative such as 30 gm sodium sulfate in 250 ml H2O.

➢ Excitement may be controlled by diazepam or other short acting barbiturates.

➢ Supportive therapy may require oxygen and assisted respiration, ice-bags or alcohol sponges for hyperpyrexia, especially in children, bladder catheterisation and the administration of fluids.

➢ Physostigmine salicylate (1-2 mg) subcutaneously or intravenously has been shown to reverse CNS symptoms of anticholinergic intoxication*.

* Merck, Sharp and Dohme MSDS

➢ Physostigmine is the only reversible acetylcholinesterase inhibitor capable of directly antagonising the CNS manifestations of anticholinergic toxicity; it is an uncharged tertiary amine that efficiently crosses the blood brain barrier.

➢ Most patients can be treated safely without physostigmine, but it is recommended for use when at least one of the following aberrations are present: tachydyssrhythmias with subsequent haemodynamic compromise, intractable seizures, or severe agitation or psychosis (in which

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

NOTE: Following overdosage, a curare-like action may occur, i.e., neuromuscular blockade leading to muscular weakness and possible paralysis. In the event of a curare-like effect on respiratory muscles, artificial respiration should be instituted and maintained until effective respiratory action returns.

Medical Conditions Aggravated by Exposure:
- Hypersensitivity to material; glaucoma; liver or kidney disease; overactive thyroid;
- gastrointestinal tract obstructive disease; enlarged prostate gland, urinary obstruction, or urinary retention; intestinal atony; ulcerative colitis;
- myasthenia gravis; heart disease, including cardiac arrhythmias, congestive heart failure, coronary artery disease, and mitral stenosis; paralytic ileus; reflux oesophagitis (gastric reflux); haemorrhage; pyloric obstruction; and tachycardia

SECTION 5 FIREFIGHTING MEASURES

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

Special hazards arising from the substrate or mixture

Fire Incompatibility
- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Advice for firefighters

Fire Fighting
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use water delivered as a fine spray to control fire and cool adjacent 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
- Combustible solid which burns but propagates flame with difficulty; it is estimated that most organic dusts are combustible (circa 70%) - according to the circumstances under which the combustion process occurs, such materials may cause fires and / or dust explosions.
- Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions).
- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust (420 micron or less) may burn rapidly and fiercely if ignited - particles exceeding this limit will generally not form flammable dust clouds; once initiated, however, larger particles up to 1400 microns diameter will contribute to the propagation of an explosion.
- In the same way as gases and vapours, dusts in the form of a cloud are only ignitable over a range of concentrations; in principle, the concepts of lower explosive limit (LEL) and upper explosive limit (UEL) are applicable to dust clouds but only the LEL is of practical use; - this is because of the inherent difficulty of achieving homogeneous dust clouds at high temperatures (for dusts the LEL is often called the "Minimum Explosible Concentration", MEC).
- When processed with flammable liquids/vapors/mists, ignitable (hybrid) mixtures may be formed with combustible dusts. Ignitable mixtures will increase the rate of explosion pressure rise and the Minimum Ignition Energy (the minimum amount of energy required to ignite dust clouds - MIE) will be lower than the pure dust in air mixture. The Lower Explosive Limit (UEL) of the vapour/dust mixture will be lower than the individual LELs for the vapors/mists or dusts.
- A dust explosion may release of large quantities of gaseous products; this in turn creates a subsequent pressure rise of explosive force capable of damaging plant and buildings and injuring people.
- Usually the initial or primary explosion takes place in a confined space such as plant or machinery, and can be of sufficient force to damage or rupture the plant. If the shock wave from the primary explosion enters the surrounding area, it will disturb any settled dust layers, forming a second dust cloud, and often initiate a much larger secondary explosion. All large scale explosions have resulted from chain reactions of this type.
- Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
- Build-up of electrostatic charge may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.
- All movable parts coming in contact with this material should have a speed of less than 1-meter/sec.
- A sudden release of statically charged materials from storage or process equipment, particularly at elevated temperatures and/or pressure, may result in ignition especially in the absence of an apparent ignition source.
- One important effect of the particulate nature of powders is that the surface area and surface structure (and often moisture content) can vary widely from sample to sample, depending of how the powder was manufactured and handled; this means that it is virtually impossible to use flammability data published in the literature for dusts (in contrast to that published for gases and vapours).
- Autoignition temperatures are often quoted for dust clouds (minimum ignition temperature (MIT)) and dust layers (layer ignition temperature (LIT)); LIT generally falls as the thickness of the layer increases.

Combustion products include:
- carbon monoxide (CO)
- carbon dioxide (CO2)
- hydrogen bromide
- nitrogen oxides (NOx)
- other pyrolysis products typical of burning organic material

May emit poisonous fumes.
SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

- Clean up waste regularly and abnormal spills immediately.
- Avoid breathing dust and contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.
- Vacuum up or sweep up. **NOTE:** Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
- Place in suitable containers for disposal.

### Minor Spills

- Prevent, by any means available, spillage from entering drains or water courses.
- Collect residues and place in sealed plastic bags or other containers for disposal.
- DO NOT eat, drink or smoke.
- Use dry clean up procedures and avoid generating dust.
- Collect residues and place in sealed plastic bags or other containers for disposal.
- ALWAYS: Wash area down with large amounts of water and prevent runoff into drains.

### Major Spills

Moderate hazard.
- CAUTION: Advise personnel in area.
- Alert Emergency Services and tell them location and nature of hazard.
- Control personal contact by wearing protective clothing.
- Prevent 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.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer’s storage and handling recommendations contained within this MSDS.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
- Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions)
- Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame.
- Establish good housekeeping practices.
- Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.
- Use continuous suction at points of dust generation to capture and minimise the accumulation of dusts. Particular attention should be given to overhead and hidden horizontal surfaces to minimise the probability of a “secondary” explosion. According to NFPA Standard 654, dust layers 1/32 in. (0.8 mm) thick can be sufficient to warrant immediate cleaning of the area.
- Do not use air hoses for cleaning.
- Minimise dry sweeping to avoid generation of dust clouds. Vacuum dust accumulating surfaces and remove to a chemical disposal area.
- Vacuums with explosion-proof motors should be used.
- Control sources of static electricity. Dusts or their packages may accumulate static charges, and static discharge can be a source of ignition.
- Solids handling systems must be designed in accordance with applicable standards (e.g. NFPA including 654 and 77) and other national guidance.
- Do not empty directly into flammable solvents or in the presence of flammable vapors.
- The operator, the packaging container and all equipment must be grounded with electrical bonding and grounding systems. Plastic bags and plastics cannot be grounded, and antistatic bags do not completely protect against development of static charges.
- Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
- DO NOT cut, drill, grind or weld such containers.
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

Environmental precautions

See section 12

SECTION 7 HANDLING AND STORAGE

Precautions for safe 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 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 storage and handling recommendations contained within this MSDS.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
- Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions)
- Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame.
- Establish good housekeeping practices.
- Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.
- Use continuous suction at points of dust generation to capture and minimise the accumulation of dusts. Particular attention should be given to overhead and hidden horizontal surfaces to minimise the probability of a “secondary” explosion. According to NFPA Standard 654, dust layers 1/32 in. (0.8 mm) thick can be sufficient to warrant immediate cleaning of the area.
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- DO NOT cut, drill, grind or weld such containers.
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

Other information

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
Avoid reaction with oxidising agents
0.41 mg/m³
43 mg/m³
The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

4.5 mg/m³

Air Speed: TEEL-2

Not Available

TEEL-1

Original IDLH

Not Available

TEEL-0

Not Available

TEEL-3

Revised IDLH

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers’ responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values.

The basic types of engineering controls are:
- Process controls which involve changing the way a job activity or process is done to reduce the risk.
- Enclosure and/or isolation of emission source which keeps a selected hazard “physically” away from the worker and ventilation that strategically “adds” and “removes” air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

### Exposure controls

### Appropriate engineering controls

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:
  - (a): particle dust respirators, if necessary, combined with an absorption cartridge;
  - (b): filter respirators with absorption cartridge or canister of the right type;
  - (c): fresh-air hoods or masks
- Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Air contaminants generated in the workplace possess varying “escape” velocities which, in turn, determine the “capture velocities” of fresh circulating air required to efficiently remove the contaminant.

<table>
<thead>
<tr>
<th>Type of Contaminant:</th>
<th>Air Speed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>direct spray, spray painting in shallow booths, drum filling, conveyor loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)</td>
<td>1-2.5 m/s (200-500 f/min.)</td>
</tr>
</tbody>
</table>
Eye and face protection

- 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 lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adhesion 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 irritation 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], [AS/NZS 1336 or national equivalent].

Skin protection

See Hand protection below

Hands/feet protection

- Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).
- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
- Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.
- Contaminated gloves should be replaced.
- Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.
  - polychloroprene.
  - nitrile rubber.
  - butyl rubber.
  - fluorocautouch.
  - polyvinyl chloride.
- Gloves should be examined for wear and/ or degradation constantly.
- Gloves must be examined for wear and degradation constantly.
- Gloves should be replaced when contaminated or damaged.
- Gloves should be examined for wear and degradation constantly.
- Gloves should be replaced when contaminated or damaged.
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- Gloves should be examined for wear and degradation constantly.
**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES**

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White deliquescent crystalline powder; mixes with water, alcohol.</td>
</tr>
<tr>
<td>Physical state</td>
<td>Divided Solid</td>
</tr>
<tr>
<td>Odour</td>
<td>Not Available</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not Available</td>
</tr>
<tr>
<td>pH (as supplied)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>285 °C</td>
</tr>
<tr>
<td>Flash point (°C)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Vapour pressure (kPa)</td>
<td>Negligible</td>
</tr>
<tr>
<td>Solubility in water (gL)</td>
<td>Miscible</td>
</tr>
<tr>
<td>Vapour density (Air = 1)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Relative density (Water = 1)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Partition coefficient n-octanol / water</td>
<td>Not Available</td>
</tr>
<tr>
<td>Auto-ignition temperature (°C)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not Available</td>
</tr>
<tr>
<td>Molecular weight (g/mol)</td>
<td>210.16</td>
</tr>
<tr>
<td>Taste</td>
<td>Not Available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not Available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not Available</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Vapour pressure (kPa)</td>
<td>Negligible</td>
</tr>
<tr>
<td>Solubility in water (gL)</td>
<td>Miscible</td>
</tr>
<tr>
<td>Vapour density (Air = 1)</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

**SECTION 10 STABILITY AND REACTIVITY**

Reactivity: See section 7

Chemical stability:  
- Unstable in the presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Possibility of hazardous reactions: See section 7

Conditions to avoid: See section 7

Incompatible materials: See section 7

Hazardous decomposition products: See section 5

**SECTION 11 TOXICOLOGICAL INFORMATION**

**TETRAETHYLAMMONIUM BROMIDE**

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>tetraethylammonium bromide</td>
<td></td>
</tr>
<tr>
<td>Intraperitoneal (mouse) LD50: 50 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Intraperitoneal (rat) LD50: 180 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Intravenous (dog) LD50: 55 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Intravenous (mouse) LD50: 14.2 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Intravenous (rabbit) LD50: 72 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Intravenous (rat) LD50: 63 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Oral (mouse) LD50: &gt;2000 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Subcutaneous (rat) LD50: 200 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

**IRRITATION**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intraperitoneal (mouse)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Intraperitoneal (rat)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Intravenous (dog)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Intravenous (mouse)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Intravenous (rabbit)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Oral (mouse)</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

**TRIETHYLAMINE HYDROBROMIDE**

<table>
<thead>
<tr>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>triethylamine hydrobromide</td>
<td></td>
</tr>
<tr>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

* Value obtained from manufacturer's msds

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

Continued...
### CMR STATUS

Not Applicable

### SECTION 12 ECOLOGICAL INFORMATION

#### Toxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Endpoint</th>
<th>Test Duration</th>
<th>Effect</th>
<th>Value</th>
<th>Species</th>
<th>BCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>tetraethylammonium bromide</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>triethylamine hydrobromide</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Toxic to aquatic organisms.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

For organic cationics

Cationic substances, and their polymers and those polymers that are reasonably anticipated to become cationic in the natural aquatic environment (pH range 4-9) may be environmental hazards. Exempt from this concern are those polymers to be used only in solid phase, such as ion-exchange resins, and where the FGEW (Functional Group Equivalent Weight) of cationic groups is not 5000 and above.

The numerous studies of aquatic toxicity, many of which were conducted in natural waters with and without added effluents, indicate that the source and composition of the test water dramatically affects the toxicity of the test substance. These results are consistent with the known behavior of these materials in the environment. Cationic substances in the environment instantaneously form complexes with naturally occurring negatively charged constituents in sewage, soils, sediments, and with dissolved humic substances in surface waters. This complexation behavior results in reduced bioavailability in actual environmental conditions that is not adequately represented by standard laboratory assays and/or predictions by various QSAR models.

#### Ecotoxicity:

These chemicals, by the nature of their surfactant properties, are toxic to aquatic organisms at low concentrations. Cationic groups such as alkylsulphoniums, alkylphosphoniums and quaternary ammonium polymers are highly toxic to fish and other aquatic organisms. Similarly potentially cationic groups such as amines and isocyanates are of concern. Some cationics, however, may fall into the category of PLCs (polymers of low concern) provided they possess low charge density, and/or are not water-soluble or are not self-dispersing polycarboxylates or poly- (aromatic or aliphatic) sulfonate polymers.

The toxicity of quaternary ammonium compounds is known to be greatly reduced in the environment because of preferential binding to dissolved organics in surface water

#### Environmental fate:

Bromide ion may be introduced to the environment after the dissociation of various salts and complexes or the degradation of organobromide compounds. Bromides may also affect the growth of micro-organisms and have been used for this purpose in industry.

Bromides in drinking water are occasionally subject to disinfection processes involving ozone of chlorine. Bromide may be oxidised to produce hypobromous acid which in turn may react with natural organic matter to form brominated compounds. The formation of bromiform has been well documented, as has the formation of bromoacetic acids, bromopicrin, cyanogen bromide, and bromocacetone. Bromates may also be formed following ozonation or chlorination if pH is relatively high. Bromates may be animal carcinogens.

Bromine reservoirs, such as HBr and BRONCO2, are much more easily broken up by sunlight; causing bromine to be from 10 to 100 times more effective than chlorine at destroying ozone. From 30-60% of bromocarbons released to the atmosphere are man-made (methyl bromide fungicides and halon fire extinguishers) and both compounds are restricted by international agreement.

### Continued...
Daphnia magna LC50 (48 h): 0.71 mg/L (as Br2)
Eastern oysters EC50 (96 h): 0.54 mg/L (as Br2)
Mysid Shrimp LC50 (LC50): 0.17 mg/L (as Br2)

For cationic surfactants:

**Environmental fate:**

Although cationic surfactants will sorb onto sludge particles and eventually reach the digester during the treatment of wastewater sludge, there is very limited information about the biodegradability of these compounds under anoxic conditions. It has been demonstrated, however, that the concentration of quaternary ammonium salts does not decrease, or only slightly decreases, in an anaerobic digester.

The numerous studies of aquatic toxicity, many of which were conducted in natural waters with and without added effluents, indicate that the source and composition of the test water dramatically affects the toxicity of the test substance. These results are consistent with the known behavior of these materials in the environment. Cationic substances in the environment instantaneously form complexes with naturally occurring negatively charged constituents in sewage, soils, sediments, and with dissolved humic substances in surface waters. This complexation behavior results in reduced bioavailability in actual environmental conditions that is not adequately represented by standard laboratory assays and/or predictions by various QSAR models.

**Ecotoxicity:**

Algae constitute a group of organisms which appears to be very sensitive to cationic surfactants. **DO NOT discharge into sewer or waterways.**

**Persistence and degradability**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Available</td>
<td>LOW</td>
<td>LOW</td>
</tr>
</tbody>
</table>

**Bioaccumulative potential**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Available</td>
<td>LOW (LogKOW = -0.2174)</td>
</tr>
</tbody>
</table>

**Mobility in soil**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Available</td>
<td>LOW (KOC = 241.3)</td>
</tr>
</tbody>
</table>

**Other adverse effects**

No data available

**SECTION 13 DISPOSAL CONSIDERATIONS**

**Waste treatment methods**

- Containers may still present a chemical hazard/danger when empty.
- Return to supplier for reuse/recycling if possible.
- Otherwise:
  - If container cannot be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury in an authorised landfill.
  - Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Legislation addressing waste disposal requirements may differ by country, state and/or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.

- **DO NOT** allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- **Dispense of by:** burial in a landfill specifically licenced to accept chemical and/or pharmaceutical wastes or Incineration in a licenced apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

**Contaminated packing materials:** Refer to section above

**Precautions for Transport:** Refer to section above

**SECTION 14 TRANSPORT INFORMATION**

**Labels Required**

<table>
<thead>
<tr>
<th>Marine Pollutant</th>
<th>NO</th>
</tr>
</thead>
</table>

**Land transport (UN): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**

**Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**
Inland waterways transport (ADNR / River Rhine): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

| UN number | Not Available |
| Packing group | Not Available |
| UN proper shipping name | Not Available |
| Environmental hazard | No relevant data |
| Transport hazard class(es) | Not Available |
| Classification code | Not Available |
| Limited quantity | Not Available |
| Equipment required | Not Available |
| Fire cones number | Not Available |

Precautions for Transport

Suitable Containers

See section 7

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

tetraethylammonium bromide(71-91-0) is found on the following regulatory lists

"China Inventory of Existing Chemical Substances"

triethylamine hydrobromide(636-70-4) is found on the following regulatory lists

"China Inventory of Existing Chemical Substances"

SECTION 16 OTHER INFORMATION

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC – TWA: Permissible Concentration-Time Weighted Average
PC – STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit,
ACGIH: American Conference of Governmental Industrial Hygienists
OSF: Odour Safety Factor
NOAEL: No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

Disclaimer

The information in the SDS applies only for the specified product and does not include mixtures of this product with other substances and mixtures. The SDS provides product safety information for personnel trained to use this product only.

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