

MERCUROUS NITRATE

GHS Safety Data Sheet

Version No:2.0

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

MERCUROUS NITRATE

OTHER NAMES

Hg-N-O3, Hg-N-O3, Hg2(NO3)2, "mercury (1) nitrate", "nitric acid, mercury (1) salt", "mercury nitrate", "mercury (I) nitrate (1:1)", "mercury (I) nitrate (1:1)", "mercurous nitrate, hydrated", "mercury protonitrate"

PROPER SHIPPING NAME

MERCUROUS NITRATE

PRODUCT USE

As an analytical agent, for fire gilding, and blackening of brass.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,

MUMBAI- 400030.INDIA.

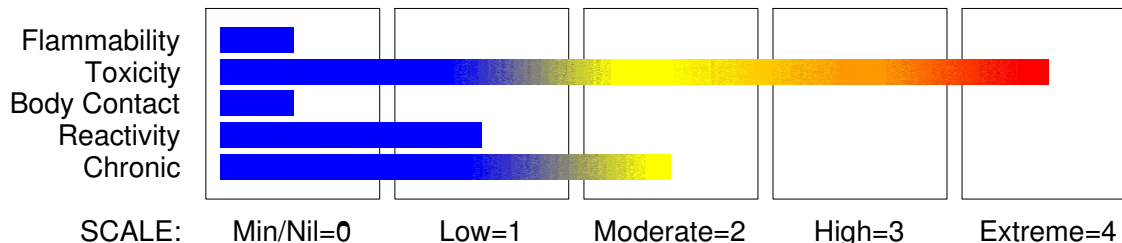
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification

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

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Section 2 - HAZARDS IDENTIFICATION

Respiratory Sensitizer Category 1
Skin Sensitizer Category 1



EMERGENCY OVERVIEW

HAZARD

DANGER

Determined by using GHS criteria:

H310 H330 H300 H334 H317 H361 H373 H410

Fatal in contact with skin

Fatal if inhaled

Fatal if swallowed

May cause allergic or asthmatic symptoms or breathing difficulties if inhaled

May cause allergic skin reaction

Suspected of damaging the unborn child

May cause damage to organs through prolonged or repeated exposure.

Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS

Prevention

Wear protective gloves/clothing

In case of inadequate ventilation wear respiratory protection.

Contaminated clothing should not be allowed out of the workplace.

Do not get in eyes, on skin or on clothing

Avoid breathing dust/fume/gas/mist/vapours/spray.

Use only outdoors or in a well ventilated area.

Wear respiratory protection.

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

Wash hands thoroughly after handling.

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

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

Obtain special instructions before use.

Use personal protective equipment as required.

Response

If exposed or concerned: Get medical attention advice.

Keep container tightly closed.

If experiencing respiratory symptoms call a POISON CENTER or doctor/physician.

If skin irritation or rash occurs, seek medical advice/attention.

Wash contaminated clothing before reuse.

IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.

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

Specific treatment: refer to Label or MSDS.

Remove/Take off immediately all contaminated clothing

Get medical advice/attention if you feel unwell.

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

Wash/Decontaminate removed clothing before reuse.

Immediately call a POISON CENTER or doctor/physician.

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Section 2 - HAZARDS IDENTIFICATION

IF ON SKIN: Gently wash with plenty of soap and water.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
mercurous nitrate	10415-75-5	>95

Section 4 - FIRST AID MEASURES

SWALLOWED

DO NOT delay.

Transport to hospital or doctor and seek immediate medical attention.

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

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

EYE

If this product comes in contact with the eyes:

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

SKIN

If skin 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

DO NOT delay.

Transport to hospital or doctor and seek immediate medical attention.

- 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

Urine mercury determination may be helpful as an index of amount of absorption. Generally, 0.1 - 0.5 mg Hg/l of urine is considered

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Section 4 - FIRST AID MEASURES

significant.

Preplacement and periodic medical examinations should be carried out for person who may be subjected to mercury exposure. Mercury should be avoided in cases of persons with skin disorders (eczema), inflammatory lesions of the mouth, and renal or neurological disorders.

[ILO Encyclopaedia]

- Moderate adsorption of inorganic mercury compounds through the gastro-intestinal tract (7-15%) is the principal cause of poisoning. These compounds are highly concentrated (as the mercuric (Hg (2+) form) in the kidney; acute ingestion may lead to oliguric renal failure. Severe mucosal necrosis may also result from ingestion.

- Chronic effects range from proteinuria to nephrotic syndrome. Chronic presentation also involves dermatitis, gingivitis, stomatitis, tremor and neuropsychiatric symptoms of erethism.

- Absorbed inorganic mercury does not significantly cross the blood-brain barrier.

- Emesis and lavage should be initiated following acute ingestion.

- Activated charcoal interrupts absorption; cathartics should be administered when charcoal is given.

- The use of British Anti-Lewisite is indicated in severe inorganic poisoning. Newer derivatives of BAL (e.g. dimercaptosuccinic acid, [DMSA] and 2,3-dimercapto-1-propanesulfate [DMPS]) may prove more effective. [Ellenhorn and Barceloux: Medical Toxicology]

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens from a healthy worker exposed at the Exposure Standard (ES or TLV).

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

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

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

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 breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- Fight fire from a safe distance, with adequate cover.
- Extinguishers should be used only by trained personnel.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- 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.
- If fire gets out of control withdraw personnel and warn against entry.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

- Will not burn but increases intensity of fire.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- Heat affected containers remain hazardous.

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Section 5 - FIRE FIGHTING MEASURES

- Contact with combustibles such as wood, paper, oil or finely divided metal may produce spontaneous combustion or violent decomposition.
 - May emit irritating, poisonous or corrosive fumes.
- Decomposes on heating and produces toxic fumes of: mercury vapour / mercury metal and toxic nitrogen oxides (NO_x).

FIRE INCOMPATIBILITY

Avoid contact with combustible materials particularly finely divided combustible materials as ignition may result.

Reacts with aluminium / zinc producing flammable, explosive hydrogen gas.

Personal Protective Equipment

Breathing apparatus.

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

- Clean up all spills immediately.
- No smoking, naked lights, ignition sources.
- Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.
- Avoid breathing dust or vapours and all contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with dry sand, earth, inert material or vermiculite.
- DO NOT use sawdust as fire may result.
- Scoop up solid residues and seal in labelled drums for disposal.
- Neutralise/decontaminate area.

MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus and protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- No smoking, flames or ignition sources.
- Increase ventilation.
- Contain spill with sand, earth or other clean, inert materials.
- NEVER USE organic absorbents such as sawdust, paper or cloth.
- Use spark-free and explosion-proof equipment.
- Collect any recoverable product into labelled containers for possible recycling.
- Avoid contamination with organic matter to prevent subsequent fire and explosion.
- DO NOT mix fresh with recovered material.
- Collect residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- Decontaminate equipment and launder all protective clothing before storage and re-use.
- 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:
mercurous nitrate 12.5 mg/m³

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Section 6 - ACCIDENTAL RELEASE MEASURES

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

mercurous nitrate 0.13 mg/m³

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

mercurous nitrate 0.125 mg/m³

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

mercurous nitrate 0.035 mg/m³

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Corrosive (C)	>= 5.0%
R51	>= 2.5%		
else	>= 10%		

where percentage is percentage of ingredient found in the mixture

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X



X



+



X



X



+

+: 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

- Avoid personal contact and inhalation of dust, mist or vapours.
- Provide adequate ventilation.
- Always wear protective equipment and wash off any spillage from clothing.
- Keep material away from light, heat, flammables or combustibles.
- Keep cool, dry and away from incompatible materials.
- Avoid physical damage to containers.
- DO NOT repack or return unused portions to original containers. Withdraw only sufficient amounts for immediate use.
- Contamination can lead to decomposition leading to possible intense heat and fire.
- When handling NEVER smoke, eat or drink.
- Always wash hands with soap and water after handling.
- Use only good occupational work practice.
- Observe manufacturer's storing and handling directions.

SUITABLE CONTAINER

Packaging as recommended by manufacturer.

- Check that containers are clearly labelled.

Glass container.

Plastic drum.

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Section 7 - HANDLING AND STORAGE

STORAGE INCOMPATIBILITY

Segregate from ammonia, phosphorus, combustibles, metals, alkalis and heat.

At high temperature, a mixture of mercurous nitrate and carbon decomposes explosively. A mixture of mercury(I) nitrate and phosphorus exploded on impact.

Segregate from combustible materials as ignition may result.

DO NOT use mild steel or galvanised containers.

- A mixture of aluminium powder, water and metal nitrate may explode due to a self accelerating reaction.
- Mixtures of metal nitrates with alkyl esters may explode due to the formation of unstable alkyl nitrates.
- Mixtures of a nitrate with phosphorous, tin(II) chloride and other reducing agents may react explosively.
- Mixtures of metal nitrates and phosphinates may explode on heating.
- Mixtures containing nitrates and organic materials are potentially dangerous, especially if acidic materials or heavy metals are present.
- Metal nitrates are incompatible with cyanides, thiocyanates, isothiocyanates and hypophosphites.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed as supplied.
- Store in a cool, well ventilated area.
- Keep dry.
- Store under cover and away from sunlight.
- Store away from flammable or combustible materials, debris and waste. Contact may cause fire or violent reaction.
- Store away from incompatible materials and foodstuff containers.
- DO NOT stack on wooden floors or pallets.
- Protect containers from physical damage.
- Check regularly for leaks.
- Observe manufacturer's storage and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- mercurous nitrate: CAS:10415- 75- 5 CAS:7782- 86- 7 CAS:14836- 60- 3

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
mercurous nitrate	10	

MATERIAL DATA

NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as a Human Carcinogen.

Some jurisdictions require that health surveillance be conducted on occupationally exposed workers. Such surveillance should emphasise

- demography, occupational and medical history and advice
- physical examination with emphasis on neurological, renal and gastrointestinal systems and skin
- urinary inorganic mercury.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTION



EYE

- Chemical goggles.
- Full face shield.

DO NOT wear contact lenses.

• 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

PVC gloves.
Rubber gloves.
Protective footwear.
Rubber boots.

OTHER

Overalls.
• Impervious apron.
• Barrier cream.
• Eyewash unit.
Ensure there is ready access to a safety shower.

RESPIRATOR

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

* - Negative pressure demand ** - Continuous flow.

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

ENGINEERING CONTROLS

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.

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MERCUROUS NITRATE

Section 8 - EXPOSURE CONTROLS / PERSONAL 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:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25- 0.5 m/s (50- 100 f/min.)
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)	0.5- 1 m/s (100- 200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500 f/min.)
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	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	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

Short colourless prismatic crystals, usually with slight odour of nitric acid.

Effloresces and becomes anhydrous in dry air. Sensitive to light.

Soluble in small quantities of warm water (hydrolyses in large quantities) and water acidified with nitric acid. Blackened by ammonia, caustic alkali and alkaline earth solutions.

PHYSICAL PROPERTIES

Solid.

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Molecular Weight: 561.22
Melting Range (°C): 70 (decomposes)
Solubility in water (g/L): Reacts
pH (1% solution): Not available.
Volatile Component (%vol): Negligible
Relative Vapour Density (air=1): Not applicable.
Lower Explosive Limit (%): Not available.
Autoignition Temp (°C): Not available.
State: Divided solid

Boiling Range (°C): Decomposes.
Specific Gravity (water=1): 4.79
pH (as supplied): Not applicable
Vapour Pressure (kPa): Negligible
Evaporation Rate: Not applicable
Flash Point (°C): Not applicable.
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 under normal handling conditions.
- Prolonged exposure to heat.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Severely toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 5 gram may be fatal or may produce serious damage to the health of the individual.

The material is considered to be harmful by all exposure routes.

Symptoms of ingestion within the first few minutes may include pain, profuse vomiting and severe purging and the victim may die within a few hours from peripheral vascular collapse secondary to fluid and electrolyte loss. Primary gastroenteritis may subside spontaneously within a few days but severe haemorrhagic inflammation of the colon (colitis) has occurred as late as 9 days following ingestion. A second phase developing over 1-3 days is characterised by stomatitis (lesions of the mouth parts), membranous colitis and kidney damage (tubular nephritis). This second phase is associated with a slow and prolonged excretion of mercury by salivary glands, the gastrointestinal mucosa and kidneys. Death in this phase usually occurs as a result of kidney failure.

The alimentary effects of many mercury compounds are so rapid that the course and outlook is largely determined by events within the first 5-10 minutes. Acute systemic mercurialism may be lethal within a few minutes or death may be delayed for 5-12 days. The ionisable salts are corrosive and tissue damage occurs almost immediately in the mouth, throat and oesophagus.

EYE

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

SKIN

Skin contact with the material may produce severely toxic effects; systemic effects may result following absorption and these may be fatal.

The material is not thought to be a skin irritant (i.e. is unlikely to produce irritant

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Section 11 - TOXICOLOGICAL INFORMATION

dermatitis as described in EC Directives using animal models). Temporary discomfort, however, may result from prolonged dermal exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

Bare unprotected skin should not be exposed to this material.

Toxic effects may result from skin absorption.

Sensitisation may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities.

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.

Not normally a hazard due to non-volatile nature of product.

Respiratory sensitisation may result in allergic/asthma like responses; from coughing and minor breathing difficulties to bronchitis with wheezing, gasping.

CHRONIC HEALTH EFFECTS

Limited evidence shows that inhalation of the material is capable of inducing a sensitisation reaction in a significant number of individuals at a greater frequency than would be expected from the response of a normal population.

Pulmonary sensitisation, resulting in hyperactive airway dysfunction and pulmonary allergy may be accompanied by fatigue, malaise and aching. Significant symptoms of exposure may persist for extended periods, even after exposure ceases. Symptoms can be activated by a variety of nonspecific environmental stimuli such as automobile exhaust, perfumes and passive smoking.

There exists limited evidence that shows that skin contact with the material is capable either of inducing a sensitisation reaction in a significant number of individuals, and/or of producing positive response in experimental animals.

Principal routes of exposure are by accidental skin and eye contact and inhalation of generated dusts.

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

TOXICITY AND IRRITATION

TOXICITY

Oral (rat) LD50: 170 mg/kg

Dermal (rat) LD50: 2330 mg/kg

Oral (mouse) LD50: 49.3 mg/kg

IRRITATION

Nil Reported

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MERCUROUS NITRATE

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant:Extreme

Mercury may occur in the environment as free mercury, $\text{Hg}(0)$, mercury ions in salts and complexes, Hg^+ and $(\text{Hg}_2)^{2+}$ and as organic mercury compounds. Each species has its own set of physical, chemical and toxicologic properties.

In natural systems a dynamic equilibrium between soil and water mercury occurs determined largely by the physicochemical and biological conditions which pertain. Mercury ion is transported to aquatic ecosystems via surface run-off and from the atmosphere. It is complexed or tightly bound to both inorganic and organic particles, particularly sediments with high sulfur content. Organic acids such as fulvic and humic acids are often associated with mercury not bound to particles. Methyl mercury is produced by sediment micro-organisms, nonbiologically in sediments and by certain species of fish. The methylation of mercury by micro-organisms is the detoxification response that allows the organism to dispose of the heavy metal ions as small organometallic complexes. Methylation occurs only within a narrow pH range in which the micro-organism might exist and the rate of synthesis depends on the redox potential, composition of the microbial population, availability of Hg_2^{2+} and temperature. Vitamin B12 derivatives are thought to be the methylating agents, because they are the only methyl carbanion- or methyl radical-donating coenzymes known. In addition it has been demonstrated that the livers of yellow-fin tuna and albacore produce methyl mercury results in its desorption at relatively high rates thus little methyl mercury is found in sediments. Demethylation by sediment micro-organisms also occurs at a rapid rate compared with methylation. The best conversion rate for inorganic mercury to methyl mercury under ideal conditions is less than 1.5% per month. Methyl mercury released into surface waters may also undergo photodecomposition into mercury.

Methyl mercury can be bioaccumulated by planktonic algae and fish. In fish, the rate of absorption of methyl mercury is faster than that of inorganic mercury and the clearance rate is slower resulting in high concentrations of methyl mercury in muscle tissue. The ratio of organic mercury to total mercury is generally high in fish compared with other aquatic organisms. Selenium which is also present in seawater and other seafoods readily complexes with methyl mercury and is thought to have a protective effect against the toxic action of methyl mercury. The danger of methyl mercury poisoning has been illustrated in Minimata, Japan in the late 1950s following industrial release of mercury into the bay which subsequently resulted in at least 1200 cases of poisoning, some fatal. The nitrates are of environmental concern because of their high water solubility and consequent leaching, diffusion, and environmental mobility in soil and water. Nitrate can contaminate groundwater to unacceptable levels. Nitrite is formed from nitrate or ammonium ion by micro-organisms in soil, water, sewage and the alimentary tract. The concern with nitrate in the environment is related to its conversion to nitrite.

Methaemoglobinaemia is caused following exposure to high levels of nitrite and produces difficulties in oxygen transport in the blood. Thousands of cases involving poisoning of infants, particularly in rural areas, have been reported as a result of drinking nitrate rich well-water.

Other concerns deriving from exposure to environmental nitrates relate to the production of nitrosamines following the reaction of food nitrites and secondary amines. Other nitroso-compounds may result following reaction with nitrites and amides, ureas, carbamates and other nitrogenous compounds. Nitrosamines produce liver damage, haemorrhagic lung lesions, convulsions and coma in rats, and teratogenic effects in experimental animals.

The N-nitroso class of compounds include potent carcinogens and mutagens: induction of tumors by single doses of N-nitroso compounds testify to this.

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Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible. Special hazard may exist - specialist advice may be required.
 - Consult manufacturer for recycling options.
 - Consult State Land Waste Management Authority for disposal.
 - Treat and neutralise residue at an approved site.
 - Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.
 - Puncture containers to prevent re-use and bury at an authorised landfill.
- For small quantities:
- Dissolve the material (in water or acid solution as appropriate) or convert it to a water soluble state with appropriate oxidising agent.
 - Precipitate as the sulfide, adjusting the pH to neutral to complete the precipitation.
 - Filter off sulfide solids for recovery or disposal to approved land-fill.
 - Destroy excess sulfide in solution with, for example, sodium hypochlorite, neutralise, and flush to sewer (subject to local regulation).

Section 14 - TRANSPORTATION INFORMATION



Labels Required: TOXIC
HAZCHEM: 2Z

UNDG:

Dangerous Goods Class: 6.1
UN Number: 1627
Shipping Name: MERCUROUS NITRATE

Subrisk: None
Packing Group: II

Air Transport IATA:

ICAO/IATA Class: 6.1
UN/ID Number: 1627
ERG Code: 6L
Shipping name: MERCUROUS NITRATE

ICAO/IATA Subrisk: None
Packing Group: II

Maritime Transport IMDG:

IMDG Class: 6.1
UN Number: 1627
EMS Number: F- A, S- A
Shipping name: MERCUROUS NITRATE

IMDG Subrisk: None
Packing Group: II
Marine Pollutant: Extreme

Section 15 - REGULATORY INFORMATION

REGULATIONS

continued...

MERCUROUS NITRATE

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Section 15 - REGULATORY INFORMATION

mercurous nitrate (CAS: 10415-75-5) is found on the following regulatory lists;
Great Lakes Binational Toxics Strategy Substances (U.S. and Canada) - Level I Substances
United Nations List of Prior Informed Consent Chemicals - Spanish

mercurous nitrate (CAS: 7782-86-7) is found on the following regulatory lists;
Great Lakes Binational Toxics Strategy Substances (U.S. and Canada) - Level I Substances
United Nations List of Prior Informed Consent Chemicals - Spanish

mercurous nitrate (CAS: 14836-60-3) is found on the following regulatory lists;
Great Lakes Binational Toxics Strategy Substances (U.S. and Canada) - Level I Substances
United Nations List of Prior Informed Consent Chemicals - Spanish

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
mercurous nitrate	10415- 75- 5, 7782- 86- 7, 14836- 60- 3

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.

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