

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 1 of 15

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

HYDRAZINE MONOHYDRATE

OTHER NAMES

N₂-H₄.H₂O, "hydrazine monohydrate aqueous", "hydrazine solution"

PROPER SHIPPING NAME

HYDRAZINE AQUEOUS SOLUTION with more than 37% hydrazine, by mass
HYDRAZINE AQUEOUS SOLUTION

PRODUCT USE

Used as a chemical intermediate, synthesis of maleic hydrazine.
Also as a catalyst.
As a component of boiler feed water treatments, oxygen scavenger.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

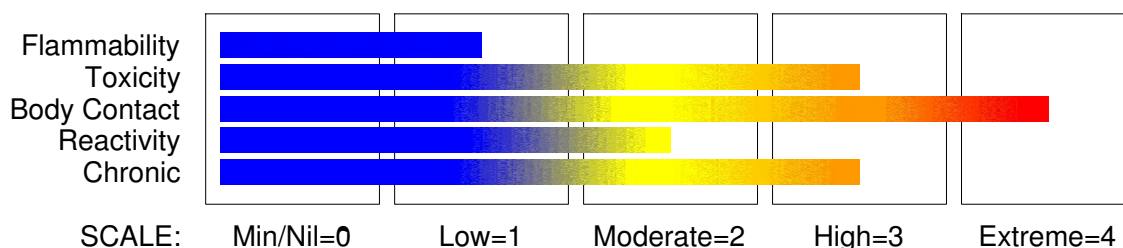
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

HAZARD RATINGS



continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 2 of 15

Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Aquatic Hazard Category 3
Acute Toxicity (Inhalation) Category 3
Acute Toxicity (Oral) Category 3
Carcinogen Category 1B
Flammable Liquid Category 4
Metal Corrosion Category 1
Respiratory Sensitizer Category 1
Skin Corrosion/Irritation Category 1B



EMERGENCY OVERVIEW

HAZARD

DANGER

Determined by using GHS criteria:

H227 H301 H331 H334 H350 H290 H314 H402

Combustible Liquid

Toxic if swallowed

Toxic if inhaled

May cause allergic or asthmatic symptoms or breathing difficulties if inhaled

May cause CANCER

May be corrosive to metals

Causes severe skin burns and eye damage

Harmful to aquatic life

PRECAUTIONARY STATEMENTS

Prevention

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

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.

Obtain special instructions before use.

Do not breathe dust or mist.

In case of inadequate ventilation wear respiratory protection.

Use explosion-proof electrical/ventilating/lighting/equipment

Keep away from flames and hot surfaces.

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

Wash hands thoroughly after handling.

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 3 of 15

Section 2 - HAZARDS IDENTIFICATION

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
Keep container tightly closed.
IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
If on skin or hair: remove/take off immediately all contaminated clothing. Rinse with water/shower.
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Specific treatment: refer to Label or MSDS.
If exposed or concerned: Get medical attention advice.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
If experiencing respiratory symptoms call a POISON CENTER or doctor/physician.
Immediately call a POISON CENTER or doctor/physician.
Call a POISON CENTER or doctor/physician if you feel unwell.

Storage

Store locked up.
Store away from other materials
Store in a corrosive resistant container with a resistant liner.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
hydrazine monohydrate	7803-57-8	>85

Section 4 - FIRST AID MEASURES

SWALLOWED

Rinse mouth out with plenty of water.
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

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 4 of 15

Section 4 - FIRST AID MEASURES

moving the eyelids by occasionally lifting the upper and lower lids.

- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:

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

INHALED

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

NOTES TO PHYSICIAN

For acute or short-term repeated exposures to highly alkaline materials:

- Respiratory stress is uncommon but present occasionally because of soft tissue edema.
 - Unless endotracheal intubation can be accomplished under direct vision, cricothyroidotomy or tracheotomy may be necessary.
 - Oxygen is given as indicated.
 - The presence of shock suggests perforation and mandates an intravenous line and fluid administration.
 - Damage due to alkaline corrosives occurs by liquefaction necrosis whereby the saponification of fats and solubilisation of proteins allow deep penetration into the tissue.
- Alkalis continue to cause damage after exposure.

INGESTION:

- Milk and water are the preferred diluents

No more than 2 glasses of water should be given to an adult.

- Neutralising agents should never be given since exothermic heat reaction may compound injury.
- * Catharsis and emesis are absolutely contra-indicated.
- * Activated charcoal does not absorb alkali.
- * Gastric lavage should not be used.

Supportive care involves the following:

- Withhold oral feedings initially.
- If endoscopy confirms transmucosal injury start steroids only within the first 48 hours.
- Carefully evaluate the amount of tissue necrosis before assessing the need for surgical intervention.
- Patients should be instructed to seek medical attention whenever they develop difficulty in swallowing (dysphagia).

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 5 of 15

Section 4 - FIRST AID MEASURES

SKIN AND EYE:

· Injury should be irrigated for 20-30 minutes.

Eye injuries require saline. [Ellenhorn & Barceloux: Medical Toxicology].

In poisonings involving hydrazine:

Correction of early hypoglycaemia, with large parenteral doses of pyridoxine appears to suppress convulsions and other neurological effects.

In man, hydrazine-induced hyperexcitability and coma may respond to massive doses of pyridoxine but there is no evidence that liver necrosis or damage can be prevented or corrected by this antidote.

GOSSELIN, SMITH & HODGE: Clinical Toxicology of Commercial Products, 5 th Ed.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

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

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- If safe, switch off electrical equipment until vapour fire hazard removed.
- 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.
 - Slight fire hazard when exposed to heat or flame.
 - Heating may cause expansion or decomposition leading to violent rupture of containers.
 - On combustion, may emit toxic fumes of carbon monoxide (CO).
 - May emit acrid smoke.
 - Mists containing combustible materials may be explosive.
- Decomposes on heating and produces toxic fumes of nitrogen oxides (NOx) and ammonia (NH3).

FIRE INCOMPATIBILITY

Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous.

Explosion hazard may follow contact with incompatible materials.

Avoid contact with acids, oxidising agents and metals, copper, nickel, chromium, alkali metals e.g. sodium, potassium, lithium and oxides of copper, nickel, chromium.

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 6 of 15

Section 5 - FIRE FIGHTING MEASURES

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

DO NOT touch the spill material · Remove all ignition sources.

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

MAJOR SPILLS

Pollutant - contain spillage . DO NOT touch the spill material.

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

hydrazine monohydrate 0.04 ppm

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

hydrazine monohydrate 0.04 ppm

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

hydrazine monohydrate 0.04 ppm

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

hydrazine monohydrate 0.02 ppm

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 7 of 15

Section 6 - ACCIDENTAL RELEASE MEASURES

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

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

SUITABLE CONTAINER

- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.
Glass container.

STORAGE INCOMPATIBILITY

- Avoid reaction with oxidising agents.
Segregate from including air, acids, some metal oxides

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 8 of 15

Section 7 - HANDLING AND STORAGE

(iron, copper and molybdenum) and some metals (carbon steel, copper, zinc).

STORAGE REQUIREMENTS

Bulk storages should be blanketed with nitrogen and equipped with absorptive type breather valve (to prevent vapour emissions).
Keep containers securely sealed and Store in a bunded area.
Store away from sources of heat or ignition / naked lights.
Store in a cool, dry and well-ventilated area.
Store away from incompatible materials.
DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
DO NOT store on wooden floors.
Store away from foodstuff containers.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• hydrazine monohydrate:

CAS:7803- 57- 8 CAS:10217- 52- 4

MATERIAL DATA

as hydrazine

TLV TWA: 0.01 ppm, 0.013 mg/m³ (skin) (A3)

CAUTION: This substance has been proposed by the ACGIH as A3 Animal Carcinogen (at relatively high doses).

ES TWA: 0.01 ppm, 0.013 mg/m³ (skin) Carcinogen Category 2

WARNING: This substance is classified by the NOHSC as Category 2 Probable Human Carcinogen.

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

Designated H in List of MAK values: Danger of cutaneous absorption.

Absorption of such substances through the skin can pose an incomparably larger danger of toxicity than their inhalation. To avoid health risks when handling such substances, meticulous cleaning of the skin, hair and clothing is imperative.

Designated S in List of MAK values: Danger of sensitization.

MAK IIIA2: Substances shown to be clearly carcinogenic only in animal studies but under conditions indicative of carcinogenic potential in the workplace.

MAK values, and categories and groups are those recommended within the Federal Republic of Germany.

Odour Threshold Value: 3.0-4.0 ppm (detection)

NOTE: Detector tubes for hydrazine, measuring in excess of 0.2 ppm, are available commercially. Long-term measurements (4 hrs) may be conducted to detect concentrations exceeding 0.05 ppm

Rats and mice inhaling hydrazine at 0.2 ppm for 6 months showed liver disease and haemopoietic depression. Mice showed an increase in pulmonary tumours. The TLV-TWA is thought to be protective against such risks.

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 9 of 15

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTION



EYE

- Chemical goggles.
- Full face shield may be required for supplementary but never for primary protection of eyes
- 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

Bare unprotected skin should not be exposed to this material.
Butyl rubber gloves or Neoprene rubber gloves or Nitrile rubber gloves.
Safety footwear.
DO NOT allow clothing wet with material to stay in contact with skin.

OTHER

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

RESPIRATOR

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.
Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	K- AUS P	-	K- PAPR- AUS P
50 x ES	-	K- AUS P	-
100 x ES	-	K- 2 P	K- PAPR- 2 P ^

^ - Full-face.

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

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 10 of 15

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Use in a well-ventilated area.

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

An approved self contained breathing apparatus (SCBA) may be required in some situations.

Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:

solvent, vapours, degreasing etc., evaporating from tank (in still air).

aerosols, fumes from pouring operations,

intermittent container filling, low speed

conveyer transfers, welding, spray drift,

plating acid fumes, pickling (released at low

velocity into zone of active generation)

direct spray, spray painting in shallow booths,

drum filling, conveyer loading, crusher dusts,

gas discharge (active generation into zone of

rapid air motion)

grinding, abrasive blasting, tumbling, high

speed wheel generated dusts (released at high

initial velocity into zone of very high rapid

air motion).

Air Speed:

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

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

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

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

Within each range the appropriate value depends on:

Lower end of the range

1: Room air currents minimal or favourable to capture

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

3: Intermittent, low production.

4: Large hood or large air mass in motion

Upper end of the range

1: Disturbing room air currents

2: Contaminants of high toxicity

3: High production, heavy use

4: Small hood- local control only

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

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 11 of 15

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Fuming liquid; soluble in water. Distinct ammoniacal or fishy odour.
Soluble in alcohol. HIGHLY REACTIVE reducing agent.
Odour threshold (3-4ppm) is higher than TLV and gives no warning property.

PHYSICAL PROPERTIES

Liquid.
Mixes with water.
Corrosive.
Alkaline.

Molecular Weight: 50.06
Melting Range (°C): - 40
Solubility in water (g/L): Miscible
pH (1% solution): 10.7
Volatile Component (%vol): 100
Relative Vapour Density (air=1): 1.1
Lower Explosive Limit (%): 4.7
Autoignition Temp (°C): 270
State: Liquid

Boiling Range (°C): 118
Specific Gravity (water=1): 1.032 @ 25C
pH (as supplied): Not applicable
Vapour Pressure (kPa): 1.9 @ 20C
Evaporation Rate: Not available
Flash Point (°C): 73
Upper Explosive Limit (%): 100
Decomposition Temp (°C): Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

No data for this material.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.
The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.
Considered toxic by all exposure routes.
Ingestion may result in nausea, pain, vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.
Hydrazine (and some of its derivatives), is a strong convulsant in laboratory animals and can cause central nervous system (CNS) depression or stimulation. Symptoms of CNS depression may include nonspecific discomfort, giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 12 of 15

Section 11 - TOXICOLOGICAL INFORMATION

fatal. CNS stimulation may produce dyspnea, coughing, bronchospasm, and laryngospasm. Muscular involvement may produce symptoms ranging from fasciculation to spasticity or seizures. Headache, dizziness and confusion may also result as can hyperpyrexia or a sensation of warmth. Other symptoms may include nausea, vomiting, diarrhoea and difficulty in urination. Cardiovascular involvement may produce alterations in blood pressure or arrhythmia.

Pulmonary oedema and cardiovascular collapse also seem to be a feature of acute hydrazine poisonings. Animals that survive for more than a day frequently develop liver necrosis and renal failure. As judged by a few severe poisonings, man reacts like monkey in the sense that liver injury is more severe than kidney failure. Severe hypoglycaemia may develop even earlier than liver necrosis although this is rarely mentioned in the literature.

EYE

The material can produce 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.

Reactions may not occur on exposure but response may be delayed with symptoms only appearing many hours later.

The vapour when concentrated has pronounced eye irritation effects and this gives some warning of high vapour concentrations. If eye irritation occurs seek to reduce exposure with available control measures, or evacuate area.

The material may produce moderate eye irritation leading to inflammation. Repeated or 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 chemical burns following direct contact with the skin.

Bare unprotected skin should not be exposed to this material.

Toxic effects may result from skin absorption.

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure.

Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

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 hazard is increased at higher temperatures.

If exposure to highly concentrated vapour atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and unless resuscitated - death.

Symptoms of inhalation of hydrazine (and some of its derivatives), may include nausea and headache. Central nervous system (CNS) excitability may lead to convulsions and, in severe cases, respiratory arrest and death. Several instances of systemic poisoning, by hydrazine, have been reported in humans. These mainly involve the CNS, respiratory system and stomach. CNS stimulation may produce twitching of the extremities, clonic movements, hyperreflexia, convulsions and pyrexia; these may progress to lethargy, ataxia, confusion

continued...

HYDRAZINE HYDRATE 99%

Section 11 - TOXICOLOGICAL INFORMATION

, coma and hypotension.

Oliguria, haematuria, hyperglycaemia and/ or hypoglycaemia and elevated LFTs are common.

Leucocytosis, parasthaesia and peripheral neuropathies may be delayed for several days.

Respiratory (and dermal) exposure may produce deficits in concentration, comprehension, memory, task performance and mood status.

Irritation of the mucous membranes may produce rhinitis, salivation, coughing, choking and dyspnoea.

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

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.

On the basis, primarily, of animal experiments, the material may be regarded as carcinogenic to humans. There is sufficient evidence to provide a strong presumption that human exposure to the material may result in cancer on the basis of:

- appropriate long-term animal studies
- other relevant information.

Considered toxic by all exposure routes.

Principal routes of exposure are usually by inhalation of vapour skin contact/absorption of the material.

Hydrazine and some of its derivatives produces local irritation, convulsions, hepatotoxicity and haemolysis. Absorption occurs through all routes of administration. Liver damage is generally the most important feature of chronic hydrazine overexposure. The characteristic liver pathology encountered with the hydrazines is fatty degeneration in the centre of the liver lobules and hepatocellular damage.

There may also be kidney damage consisting of nephritis and acute tubular necrosis.

Other symptoms of chronic exposure to the hydrazines include lethargy, conjunctivitis, tremor, pyrexia, vomiting and diarrhoea

Some hydrazine derivatives induce central nervous system (CNS) excitability, tremors and convulsion progressing to CNS depression and possible fatal respiratory system collapse. Hydrazine allergy has been reported.

When administered orally, hydrazine induced pulmonary adenomas and adenocarcinomas in mice. Inhalation induced lung carcinomas and lymphosarcomas of the spleen in female mice. A study of 423 men, involved in the manufacture of hydrazine revealed three stomach, one prostate and a neurogenic cancer.

TOXICITY AND IRRITATION

TOXICITY

Oral (rat) LD50: 129 mg/kg

IRRITATION

Nil Reported

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 14 of 15

Section 11 - TOXICOLOGICAL INFORMATION

Section 12 - ECOLOGICAL INFORMATION

Based on data for a number of hydrazines, the material may be hazardous to plant life and aquatic organisms. Hydrazine, itself, has a high acute toxicity to algae, fish and daphnids.

Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible. Incinerate residue at an approved site.
Consult State Land Waste Management Authority for disposal.
Decontaminate empty containers with water.
Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION



Labels Required: CORROSIVE, TOXIC
HAZCHEM: 2P

UNDG:

Dangerous Goods Class:	8	Subrisk:	6.1
UN Number:	2030	Packing Group:	II
Shipping Name: HYDRAZINE AQUEOUS SOLUTION with more than 37% hydrazine, by mass			

Air Transport IATA:

ICAO/IATA Class:	8	ICAO/IATA Subrisk:	6.1
UN/ID Number:	2030	Packing Group:	II
ERG Code:	8P		
Shipping name: HYDRAZINE AQUEOUS SOLUTION with more than 37% hydrazine, by mass			
HYDRAZINE AQUEOUS SOLUTION			

Maritime Transport IMDG:

IMDG Class:	8	IMDG Subrisk:	6.1
UN Number:	2030	Packing Group:	II
EMS Number:	F- A, S- B		
Shipping name: HYDRAZINE AQUEOUS SOLUTION with more than 37% hydrazine, by mass			
HYDRAZINE AQUEOUS SOLUTION			

continued...

HYDRAZINE HYDRATE 99%

GHS Safety Data Sheet

Version No:2.0

Page 15 of 15

Section 15 - REGULATORY INFORMATION

REGULATIONS

hydrazine monohydrate (CAS: 7803-57-8) is found on the following regulatory lists;
OECD Representative List of High Production Volume (HPV) Chemicals

No data available for hydrazine monohydrate as CAS: 10217-52-4.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
hydrazine monohydrate	7803- 57- 8, 10217- 52- 4

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: 16-Aug-2017