

HYDRAZINE HYDRATE

MSDS Number: H3557 --- Effective Date: 12/08/96

1. Product Identification

Synonyms: Hydrazine monohydrate; Diamine Hydrate; Hydrazine Aqueous.

CAS No.: 302-01-2

Molecular Weight: 50.08

Chemical Formula: NH₂NH₂.H₂O

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Hydrazine	302-01-2	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

CORROSIVE. COMBUSTIBLE LIQUID AND VAPOR. CAUSES BURNS TO ANY AREA OF CONTACT. MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. EFFECTS LIVER, KIDNEYS, RESPIRATORY SYSTEM, BLOOD, AND CENTRAL NERVOUS SYSTEM. POSSIBLE CANCER HAZARD. MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

J.T. Baker SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Cancer Causing)

Flammability Rating: 2 - Moderate

Reactivity Rating: 3 - Severe (Explosive)

Contact Rating: 3 - Severe (Life)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code:

Red Stripe (Store Separately)

Potential Health Effects

POISON. Very toxic by any route of exposure.

Inhalation:

Vapors will irritate or burn the mucous membranes and upper respiratory tract. Overexposure can produce severe health effects, including narcosis, pulmonary edema, weight loss, weakness, tremors, burning sensation, dizziness, nausea, convulsions, and sensitization. Hydrazine concentration considered to be immediately dangerous to life and health is 80 ppm.

Ingestion:

POISON. Swallowing will cause burns to the mouth and throat, gastrointestinal irritation, and may be fatal. Health effect may parallel those from inhalation.

Skin Contact:

Causes severe skin irritation and burns. Is a skin sensitizer. Absorption may occur with effects similar to inhalation overexposure.

Eye Contact:

Vapors cause severe eye irritation with swelling, burning, redness and discharge. Liquid contact can produce penetrating burns and possible permanent corneal opacity with visual impairment. Temporary blindness may occur with a severe exposure.

Chronic Exposure:

The liver is thought to be the primary target organ in hydrazine exposure. Other organs that may be affected include the kidneys, lungs, blood system and central nervous system. Carcinogenic potential based on animal test.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures**Fire:**

Flash point: 73C (163F) CC Combustible Liquid and Vapor! Hydrazine vapor in air is flammable at and above 4.7% (hydrazine by volume); handle under nitrogen.

Explosion:

Above the flash point, explosive vapor-air mixtures may be formed.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures**7. Handling and Storage**

Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage. Store separately from reactive or combustible materials, and out of direct sunlight. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street

clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Obtain guidance from supplier. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

- For Hydrazine (CAS 302-01-2) - OSHA (PEL): 1 ppm (TWA), skin. ACGIH (TLV): 0.01 ppm (TWA), skin, A3 - animal carcinogen. NIOSH (REL): 0.03 ppm (2-hour), ceiling, potential occupational carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airtight hood, or full-facepiece self-contained breathing apparatus.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Colorless, fuming liquid.

Odor:

Sharp ammoniacal or fishy-like amine odor.

Solubility:

Miscible in water.

Specific Gravity:

1.032

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

118.5C (244F)

Melting Point:

-51.7C (-62F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

5.2 @ 20C (68F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable at room temperature in closed containers packed under inert atmosphere, in the absence of UV radiation. Thermally unstable. Keep out of direct sunlight. Solution is alkaline. Prevent contamination.

Hazardous Decomposition Products:

Burning may produce ammonia, nitrogen oxides.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Powerful reducing agent; reacts vigorously with most oxidizing materials (including air). A strong alkali. Iron oxide can catalyze hydrazine vapor ignition with air as low as 74F. Incompatible with oxidizing agents, acids, wood, cloth. Contact of vapor with metal oxides (such as iron, copper, lead, molybdenum) can result in fire and possible explosion. Solutions attack glass, rubber, cork; stainless steels such as 316 should be used.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Oral rat LD50: 129 mg/Kg. Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Hydrazine (302-01-2)	No	Yes	2B

12. Ecological Information

Environmental Fate:

When released into the soil, this material is not expected to biodegrade. When released into the soil, this material may leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material is not expected to biodegrade. When released to water, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life between 1 and 10 days. This material has an experimentally-determined bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is not expected to be degraded by photolysis. When released into the air, this material is expected to have a half-life of less than 1 day.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----
Ingredient TSCA EC Japan Australia

Hydrazine (302-01-2) Yes NE* Yes Yes

-----\Chemical Inventory Status - Part 2\-----
--Canada--
Ingredient Korea DSL NDSL Phil.

Hydrazine (302-01-2) Yes Yes No Yes

*NE - Not Evaluated

-----\Federal, State & International Regulations - Part 1\-----
-SARA 302- -SARA 313-----
Ingredient RQ TPQ List Chemical Catg.

Hydrazine (302-01-2) 1 1000 Yes No

-----\Federal, State & International Regulations - Part 2\-----
-RCRA- -TSCA-
Ingredient CERCLA 261.33 8(d)

Hydrazine (302-01-2) 1 U133 No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Mixture / Liquid)

Prop 65:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: 2P

Poison Schedule: S6

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

Health: 3 Flammability: 3 Reactivity: 3

Label Hazard Warning:

DANGER! CORROSIVE. COMBUSTIBLE LIQUID AND VAPOR. CAUSES BURNS TO ANY AREA OF CONTACT. MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE

ALLERGIC SKIN REACTION. EFFECTS LIVER, KIDNEYS, RESPIRATORY SYSTEM, BLOOD, AND CENTRAL NERVOUS SYSTEM. POSSIBLE CANCER HAZARD. MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

Label Precautions:

Do not breathe vapor. Do not get in eyes, on skin, or on clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Keep away from heat, sparks and flame.

Label First Aid:

In all cases call a physician immediately. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Product Use:

Laboratory Reagent.

Revision Information:

New 16 section MSDS format, all sections have been revised.

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