Material Safety Data Sheet
Hydrazine hydrate, 100% (Hydrazine, 64%)

ACC# 11041

Section 1 - Chemical Product and Company Identification

MSDS Name: Hydrazine hydrate, 100% (Hydrazine, 64%)
Catalog Numbers: AC196710000, AC196710050, AC196711000, AC196715000, NC9130650, O3109-500, XXAC19671-5KG
Synonyms: None.
Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
302-01-2	Hydrazine	64	206-114-9
7732-18-5	Water	36	231-791-2

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless liquid. Flash Point: 75 deg C.
Danger! Toxic if swallowed, inhaled or absorbed through the skin. Causes eye and skin burns. Corrosive. May cause allergic skin reaction. May be absorbed through intact skin. **Combustible liquid and vapor.** Cancer suspect agent. May cause blood abnormalities. May cause severe respiratory and digestive tract irritation with possible burns. May cause liver and kidney damage. Air sensitive. May cause reproductive and fetal effects.
Target Organs: Blood, kidneys, liver, respiratory system, eyes, skin.

Potential Health Effects
Eye: Causes eye burns. Effects may be delayed. May cause temporary blindness. May cause visual impairment.
Skin: Causes skin burns. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Toxic in contact with skin. Substance is readily absorbed through the skin.
Ingestion: Poison by ingestion. May cause liver and kidney damage. Causes digestive tract burns with immediate pain, swelling of the throat, convulsions, and possible coma. Exposure may cause anemia and other blood abnormalities.
Inhalation: Effects may be delayed. May cause cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood). May cause liver and kidney damage. Causes chemical burns to the respiratory tract. May cause lung damage. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Toxic if inhaled. Inhalation may produce burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. May cause respiratory sensitization.
Chronic: Possible cancer hazard based on tests with laboratory animals. Prolonged or repeated exposure may cause adverse reproductive effects. Repeated inhalation may cause chronic bronchitis. May cause fetal effects. Repeated exposure may cause sensitization dermatitis. Tumorigenic Data has been reported in a mouse study with skin dosing.

Section 4 - First Aid Measures

Eyes: Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Discard contaminated clothing in a manner which limits further exposure.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Use water spray to keep fire-exposed containers cool. Combustible liquid. Containers may explode when heated. Powerful reducing agent.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers.
Flash Point: 75 deg C (167.00 deg F)

Autoignition Temperature: Not available.
Explosion Limits, Lower:3.5%
Upper: 99.99%
NFPA Rating: (estimated) Health: 3; Flammability: 2; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Do not use combustible materials such as sawdust. Use a spark-proof tool. Provide ventilation. Place under an inert atmosphere.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Do not ingest or inhale. Handle under an inert atmosphere. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation.
Storage: Keep away from sources of ignition. Do not store in direct sunlight. Keep refrigerated. (Store below 4°C/39°F.) Store in a tightly closed container. Corrosives area. Do not expose to air. Store under an inert atmosphere.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low. Use only under a chemical fume hood.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Hydrazine	0.01 ppm TWA; Skin - potential significant contribution to overall exposure by the cutaneous r oute	50 ppm IDLH	1 ppm TWA; 1.3 mg/m3 TWA
Water	none listed	none listed	none listed
Hydrazine monohydrate	none listed	none listed	none listed
Hydrazine hydrate	none listed	none listed	none listed

OSHA Vacated PELs: Hydrazine: 0.1 ppm TWA; 0.1 mg/m3 TWA Water: No OSHA Vacated PELs are listed for this chemical. Hydrazine monohydrate: No OSHA Vacated PELs are listed for this chemical. Hydrazine hydrate: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear chemical splash goggles and face shield.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: colorless
Odor: strong odor - ammonia-like
pH: Strong Base
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 118 deg C
Freezing/Melting Point:-51.7 deg C
Decomposition Temperature: Not available.
Solubility: Miscible in water.
Specific Gravity/Density: Not available.
Molecular Formula:H4N2.H2O
Molecular Weight:50.06

Section 10 - Stability and Reactivity

Chemical Stability: Stable. However becomes unstable if dehydrated.
Conditions to Avoid: Incompatible materials, ignition sources, exposure to air, excess heat, temperatures above 100°C.
Incompatibilities with Other Materials: Oxidizing agents, acids, alkali metals, copper, glass, halogens, iron, nitric acid, nitrites, perchlorates, sodium hydroxide, zinc, potassium, hydrogen peroxide, sodium, lead, dinitrogen tetraoxide, molybdenum(IV) oxide, mercuric oxide, organic matter, metal salts, stannous chloride, 2,4-Dinitrochlorobenzene, thiocyanates, rust, metal oxides.
Hazardous Decomposition Products: Nitrogen oxides, ammonia and/or derivatives, hydrogen gas.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 302-01-2: MU7175000
CAS# 7732-18-5: ZC0110000
CAS# 7803-57-8: MV8050000
CAS# 10217-52-4: MV4590000
LD50/LC50:
CAS# 302-01-2:
Dermal, guinea pig: LD50 = 190 mg/kg;
Inhalation, mouse: LC50 = 252 ppm/4H;
Inhalation, mouse: LC50 = 1000 mg/m3/2H;
Inhalation, mouse: LC50 = 320 mg/m3/4H;
Inhalation, rat: LC50 = 570 ppm/4H;
Inhalation, rat: LC50 = 130 mg/m3/2H;
Oral, mouse: LD50 = 59 mg/kg;
Oral, mouse: LD50 = 59 mg/kg;
Oral, rat: LD50 = 60 mg/kg;
Oral, rat: LD50 = 60 mg/kg;
Skin, rabbit: LD50 = 91 mg/kg;
.

CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg;
.

CAS# 7803-57-8:
Oral, mouse: LD50 = 83 mg/kg;
Oral, rabbit: LD50 = 55 mg/kg;
Oral, rat: LD50 = 129 mg/kg;
.

CAS# 10217-52-4:
Inhalation, rat: LC50 = 80 mg/m3;
Oral, mouse: LD50 = 83 mg/kg;
Oral, rabbit: LD50 = 55 mg/kg;
Oral, rat: LD50 = 129 mg/kg;
.

Carcinogenicity:
CAS# 302-01-2:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** carcinogen, initial date 1/1/88
- **NTP:** Suspect carcinogen
- **IARC:** Group 2B carcinogen

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 7803-57-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 10217-52-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: Mutation data has been reported.
Teratogenicity: No data available.
Reproductive Effects: Adverse reproductive effects have occurred in experimental animals.
Mutagenicity: Mutagenic effects have occurred in experimental animals.
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. European carp: LC50 = 1.48mg/L (unknown time) Zebra fish: LC50 = 3.18mg/L (unknown time)Roach: LC50 = 0.85mg/L (unknown time)
Environmental: Substance shows moderate biological oxygen demand and it may cause some oxygen depletion in aquatic systems. It has a high potential to affect aquatic organisms. Substance is biodegradable and is not likely to bioconcentrate.
Physical: No information available.
Other: None.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series:
CAS# 302-01-2: waste number U133 (Reactive waste, Toxic waste).

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	HYDRAZINE AQUEOUS SOLUTION	HYDRAZINE, AQUEOUS SOLUTION

Hazard Class:	8	8(6.1)
UN Number:	UN2030	UN2030
Packing Group:	II	II

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 302-01-2 is listed on the TSCA inventory.
CAS# 7732-18-5 is listed on the TSCA inventory.
CAS# 7803-57-8 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).
CAS# 10217-52-4 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 302-01-2: 1 lb final RQ; 0.454 kg final RQ

SARA Section 302 Extremely Hazardous Substances

CAS# 302-01-2: 1000 lb TPQ

SARA Codes

CAS # 302-01-2: immediate, delayed, fire, reactive.
CAS # 7803-57-8: immediate, delayed, fire, reactive.

Section 313

This material contains Hydrazine (CAS# 302-01-2, 64%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 302-01-2 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 302-01-2 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
CAS# 7803-57-8 can be found on the following state right to know lists: New Jersey.
CAS# 10217-52-4 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains Hydrazine, a chemical known to the state of California to cause cancer.
California No Significant Risk Level: CAS# 302-01-2: 0.04 æg/day NSRL

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T C N

Risk Phrases:

R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
R 34 Causes burns.
R 43 May cause sensitization by skin contact.
R 45 May cause cancer.
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.
S 60 This material and its container must be disposed of as hazardou s waste.
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

WGK (Water Danger/Protection)

CAS# 302-01-2: 3

CAS# 7732-18-5: No information available.
CAS# 7803-57-8: 3
CAS# 10217-52-4: No information available.

Canada - DSL/NDSL

CAS# 302-01-2 is listed on Canada's DSL List.
CAS# 7732-18-5 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D1A, D2A, E, B3.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 302-01-2 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 4/26/1999
Revision #7 Date: 1/04/2005