

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

## 1 Identification of substance:

### Product details:

**Product name:** Hydrazine

**Stock number:** 32728

### Manufacturer/Supplier:

Alfa Aesar, A Johnson Matthey Company  
Johnson Matthey Catalog Company, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Emergency Phone: (978) 521-6300  
CHEMTREC: (800) 424-9300  
Web Site: www.alfa.com

**Information Department:** Health, Safety and Environmental Department

### Emergency information:

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

## 2 Composition/Data on components:

### Chemical characterization:

**Description:** (CAS#)

hydrazine (CAS# 302-01-2); 100%

**Identification number(s):**

**EINECS Number:** 206-114-9

**Index number:** 007-008-00-3

## 3 Hazards identification

### Hazard description:



T Toxic  
N Dangerous for the environment

### Information pertaining to particular dangers for man and environment

R 45 May cause cancer.

R 10 Flammable.

R 23/24/25 Also toxic by inhalation, in contact with skin and if swallowed.

R 34 Causes burns.

R 43 May cause sensitization by skin contact.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

### Classification system

**HMIS ratings (scale 0-4)**

(Hazardous Materials Identification System)

HEALTH	3	Health (acute effects) = 3
FIRE	3	Flammability = 3
REACTIVITY	3	Reactivity = 3

### GHS label elements



**Danger**

3.1/2 - Fatal if swallowed.

3.1/2 - Fatal in contact with skin.

3.1/2 - Fatal if inhaled.

3.4/1 - May cause an allergic skin reaction.



**Danger**

3.6/1A - May cause cancer.



**Danger**

3.2/1A - Causes severe skin burns and eye damage.

(Contd. on page 2)

USA

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

**Product name:** Hydrazine

(Contd. of page 1)

**Warning**

2.6/3 - Flammable liquid and vapour.

**Warning**

4.1/1 - Very toxic to aquatic life with long lasting effects.

**Prevention:**

Obtain special instructions before use.

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

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Keep container tightly closed.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/ equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

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

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

Do not get in eyes, on skin, or on clothing.

Wash thoroughly after handling.

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

Use only outdoors or in a well-ventilated area.

Contaminated work clothing should not be allowed out of the workplace.

Avoid release to the environment.

Wear protective gloves/protective clothing/eye protection/face protection.

Use personal protective equipment as required.

Wear respiratory protection.

**Response:**

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

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

IF ON SKIN: Wash with plenty of soap and water.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

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

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF exposed or concerned: Get medical advice/attention.

Immediately call a POISON CENTER or doctor/physician.

Specific treatment is urgent (see label).

Specific treatment (see label).

Specific measures (see label).

Rinse mouth.

If skin irritation or rash occurs: Get medical advice/attention.

Remove/Take off immediately all contaminated clothing.

Wash contaminated clothing before reuse.

In case of fire: Use for extinction: CO2, powder or water spray.

Collect spillage.

**Storage:**

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Store locked up.

**Disposal:**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**4 First aid measures****General information**

Immediately remove any clothing soiled by the product.

Remove breathing apparatus only after contaminated clothing has been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

(Contd. on page 3)

- USA -

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

**Product name:** Hydrazine

(Contd. of page 2)

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing**

Do not induce vomiting; immediately call for medical help.

Seek immediate medical advice.

**5 Fire fighting measures****Suitable extinguishing agents**

Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Keep away from ignition sources.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**7 Handling and storage****Handling****Information for safe handling:**

Handle under protective gas.

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Open and handle container with care.

**Information about protection against explosions and fires:**

Keep ignition sources away.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

**Storage****Requirements to be met by storerooms and receptacles:** No special requirements.**Information about storage in one common storage facility:**

Store away from metals.

Do not store together with oxidizing and acidic materials.

Store away from halogens.

**Further information about storage conditions:**

Store under inert gas.

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**8 Exposure controls and personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Components with limit values that require monitoring at the workplace:**

Hydrazine

	ppm
ACGIH TLV	0.01
Denmark TWA	0.1 (skin)
Finland TWA	0.1, 0.3-STEL (skin)
France TWA	0.1

(Contd. on page 4)

-USA-

## Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

**Product name:** Hydrazine

(Contd. of page 3)

Ireland TWA 0.1 (skin)  
 Netherlands TWA 0.1 (skin)  
 Russia TWA 0.1 (skin)  
 Sweden TWA 0.1, 0.3-STEEL (skin)  
 Switzerland TWA 0.1 (skin)  
 United Kingdom TWA 0.02, 0.1-STEEL  
 USA PEL 1 (skin)

**Additional information:** No data

**Personal protective equipment**

**General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

**Protection of hands:** Impervious gloves

**Eye protection:**

Safety glasses

Tightly sealed goggles

Full face protection

**Body protection:** Protective work clothing.

### 9 Physical and chemical properties:

**General Information**

<b>Form:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Ammonia-like

**Change in condition**

<b>Melting point/Melting range:</b>	1.4°C (35°F)
<b>Boiling point/Boiling range:</b>	113.5°C (236°F)
<b>Sublimation temperature / start:</b>	Not determined

<b>Flash point:</b>	38°C (100°F)
---------------------	--------------

<b>Ignition temperature:</b>	270°C (518°F)
------------------------------	---------------

<b>Decomposition temperature:</b>	Not determined
-----------------------------------	----------------

**Explosion limits:**

<b>Lower:</b>	4.7 Vol %
<b>Upper:</b>	100 Vol %

<b>Vapor pressure at 20°C (68°F):</b>	13 hPa (10 mm Hg)
---------------------------------------	-------------------

<b>Density at 20°C (68°F):</b>	1.011 g/cm <sup>3</sup>
--------------------------------	-------------------------

**Solubility in / Miscibility with**

<b>Water at 20°C (68°F):</b>	1000 g/l
------------------------------	----------

### 10 Stability and reactivity

**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:**

Oxidizing agents

Oxygen

Metal powders

Organic materials

**Dangerous reactions**

Forms explosive gas mixture with air

Reacts with various metals

Explosive reaction with oxidizing agents such as calcium chlorate and or peroxides

Reacts with acids

**Dangerous products of decomposition:** Nitrogen oxides

USA

(Contd. on page 5)

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

**Product name:** Hydrazine

(Contd. of page 4)

## 11 Toxicological information

### Acute toxicity:

#### LD/LC50 values that are relevant for classification:

Oral	LD50	59 mg/kg (mouse)
		60 mg/kg (rat)
Dermal	LD50	190 mg/kg (guinea pig)
		91 mg/kg (rabbit)
Inhalative	LC50/4H	252 ppm/4H (mouse)
		570 ppm/4H (rat)

### Primary irritant effect:

#### on the skin:

Corrosive effect on skin and mucous membranes.

Irritant to skin and mucous membranes.

#### on the eye:

Strong corrosive effect.

Irritating effect.

**Sensitization:** Sensitization possible through skin contact.

### Other information (about experimental toxicology):

Mutagenic effects have been observed on tests with bacteria.

### Subacute to chronic toxicity:

Hydrazine and its derivatives may be corrosive and skin sensitizers. They are experimental carcinogens of the lungs, nervous system, liver, kidney, breast and skin. Mutagenic data has been reported. Ingestion may cause gastrointestinal and central nervous system damage.

Contact with the eyes can cause permanent injury or blindness. Inhalation can lead to lung, liver, kidney and blood injury. Exposure may also cause cyanosis, dizziness, nausea, vomiting, diarrhea and convulsions.

### Additional toxicological information:

Danger through skin absorption.

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

EPA-B2: Probable human carcinogen, sufficient evidence from animal studies; inadequate evidence or no data from epidemiologic studies.

IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.

NTP-2: Reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals.

ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.

## 12 Ecological information:

### Ecotoxicological effects:

**Remark:** Very toxic for fish

### General notes:

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Do not allow material to be released to the environment without proper governmental permits.

Very toxic for aquatic organisms

## 13 Disposal considerations

### Product:

**Recommendation** Consult state, local or national regulations to ensure proper disposal.

### Uncleaned packagings:

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

USA

(Contd. on page 6)

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

Product name: Hydrazine

(Contd. of page 5)

## 14 Transport information

### DOT regulations:



**Hazard class:** 8  
**Identification number:** UN2029  
**Packing group:** I  
**Hazardous substance:** 1 lbs, 0.454 kg  
**Proper shipping name (technical name):** HYDRAZINE, ANHYDROUS  
**Label:** 8 + 3 + 6.1

### Land transport ADR/RID (cross-border)



**ADR/RID class:** 8 (CFT) Corrosive substances  
**Danger code (Kemler):** -  
**UN-Number:** 2029  
**Packaging group:** I  
**Description of goods:** 2029 HYDRAZINE, ANHYDROUS

### Maritime transport IMDG:



**IMDG Class:** 8  
**UN Number:** 2029  
**Label:** 8 + 3 + 6.1  
**Packaging group:** I  
**EMS Number:** F-E, S-C  
**Proper shipping name:** HYDRAZINE, ANHYDROUS

### Air transport ICAO-TI and IATA-DGR:



**ICAO/IATA Class:** 8  
**UN/ID Number:** 2029  
**Label:** 8 + 3 + 6.1  
**Packaging group:** I  
**Proper shipping name:** HYDRAZINE, ANHYDROUS

**UN "Model Regulation":** UN2029, HYDRAZINE, ANHYDROUS, 8 (3+6.1), I  
**Environmental hazards:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID

## 15 Regulations

### Product related hazard informations:

#### Hazard symbols:

T Toxic  
 N Dangerous for the environment

#### Risk phrases:

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

#### Safety phrases:

53 Avoid exposure - obtain special instructions before use.

(Contd. on page 7)

-USA-

## Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

**Product name:** Hydrazine

(Contd. of page 6)

45 In case of accident or if you feel unwell, seek medical advice immediately.

60 This material and its container must be disposed of as hazardous waste.

61 Avoid release to the environment. Refer to special instructions/Safety data sheets

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

This product contains a chemical known to the state of California to cause cancer or reproductive toxicity.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

**Information about limitation of use:**

For use only by technically qualified individuals.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.

**Contact:** Zachariah Holt

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

USA