

## 1 Identification

### Product identifier

**Product name:** N,N-Dimethylhydrazine

**Stock number:** 41824, L07567

**CAS Number:**  
57-14-7

**EC number:**  
200-316-0

**Index number:**  
007-012-00-5

**Relevant identified uses of the substance or mixture and uses advised against.**

**Identified use:** SU24 Scientific research and development

### Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

Alfa Aesar  
Thermo Fisher Scientific Chemicals, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Tel: 800-343-0660  
Fax: 800-322-4757  
Email: tech@alfa.com  
www.alfa.com

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

#### Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

## 2 Hazard(s) identification

### Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

 GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.

 GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 1 H330 Fatal if inhaled.

 GHS08 Health hazard

Carc. 1A H350 May cause cancer.

 GHS05 Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.

**Hazards not otherwise classified** No information known.

### Label elements

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

#### Hazard pictograms



GHS02 GHS05 GHS06 GHS08

### Signal word

**Danger**

### Hazard statements

H225 Highly flammable liquid and vapor.

H301 Toxic if swallowed.

H330 Fatal if inhaled.

H314 Causes severe skin burns and eye damage.

H350 May cause cancer.

### Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor/...

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P320 Specific treatment is urgent (see on this label).

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

### WHMIS classification

B2 - Flammable liquid

D1A - Very toxic material causing immediate and serious toxic effects

D2A - Very toxic material causing other toxic effects

E - Corrosive material



Product name: **N,N-Dimethylhydrazine**

Classification system  
HMIS ratings (scale 0-4)  
(Hazardous Materials Identification System)

HEALTH	4	Health (acute effects) = 4
FIRE	3	Flammability = 3
REACTIVITY	2	Physical Hazard = 2

Other hazards  
Results of PBT and vPvB assessment  
PBT: Not applicable.  
vPvB: Not applicable.

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3 Composition/information on ingredients

Chemical characterization: Substances  
CAS# Description:  
57-14-7 N,N-Dimethylhydrazine  
Identification number(s):  
EC number: 200-316-0  
Index number: 007-012-00-5

4 First-aid measures

Description of 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.  
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.  
Information for doctor  
Most important symptoms and effects, both acute and delayed  
Causes severe skin burns.  
Causes serious eye damage.  
Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

Extinguishing media  
Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.  
Special hazards arising from the substance or mixture If this product is involved in a fire, the following can be released:  
Advice for firefighters  
Protective equipment:  
Wear self-contained respirator.  
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures  
Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation  
Keep away from ignition sources  
Environmental precautions: Do not allow material to be released to the environment without proper governmental permits.  
Methods and material for containment and cleaning up:  
Keep away from ignition sources.  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Use neutralizing agent.  
Dispose of contaminated material as waste according to section 13.  
Ensure adequate ventilation.  
Prevention of secondary hazards: Keep away from ignition sources.  
Reference to other sections  
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  
Precautions for safe handling  
Handle under dry argon.  
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:  
Protect against electrostatic charges.  
Fumes can combine with air to form an explosive mixture.  
Keep ignition sources away.  
Conditions for safe storage, including any incompatibilities  
Storage  
Requirements to be met by storerooms and receptacles: Store in a cool location.  
Information about storage in one common storage facility:  
Store away from oxidizing agents.  
Store away from metals.  
Further information about storage conditions:  
Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.

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USA

Product name: **N,N-Dimethylhydrazine**

Specific end use(s) No further relevant information available. (Contd. of page 2)

**8 Exposure controls/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.

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

N,N-Dimethylhydrazine (1,1-Dimethylhydrazine)

ACGIH TLV	ppm	0.01; A3 (skin)
Denmark TWA		0.1 (skin; carcinogen)
Finland TWA		0.1 (skin; carcinogen)
France TWA		0.1 (carcinogen)
Germany TWA		(skin; carcinogen)
Ireland TWA		0.5 (carcinogen)
Netherlands TWA		0.5 (skin)
Sweden TWA		0.1; 0.5-STEL (skin; carcinogen)
Switzerland TWA		0.5 (skin; carcinogen)
OSHA PEL		0.5 (skin)

57-14-7 N,N-Dimethylhydrazine (100.0%)	
PEL (USA)	Long-term value: 1 mg/m³, 0.5 ppm Skin
REL (USA)	Ceiling limit value: 0.15 mg/m³, 0.06 ppm *120-min;See Pocket Guide App. A
TLV (USA)	Long-term value: 0.025 mg/m³, 0.01 ppm Skin
EL (Canada)	Long-term value: 0.01 ppm Skin; IARC 2B
EV (Canada)	Long-term value: 0.01 ppm Skin

**Additional information:** No data

**Exposure controls**

**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.  
Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use self-contained respiratory protective device in emergency situations.

**Protection of hands:**  
Impervious gloves  
Check protective gloves prior to each use for their proper condition.  
The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Eye protection:**  
Tightly sealed goggles  
Full face protection

**Body protection:** Protective work clothing.

**9 Physical and chemical properties**

**Information on basic physical and chemical properties**

**General Information**

**Appearance:**

Form:	Liquid
Color:	Light yellow
Odor:	Odorless
Odor threshold:	Not determined.

**pH-value:** Not determined.

**Change in condition**

Melting point/Melting range:	-58 °C (-72 °F)
Boiling point/Boiling range:	62-64 °C (144-147 °F) ((753mm Hg))
Sublimation temperature / start:	Not determined

**Flash point:** 1 °C (34 °F)

**Flammability (solid, gaseous):** Not determined.

**Ignition temperature:** 478 °C (892 °F)

**Decomposition temperature:** Not determined

**Auto igniting:** Not determined.

**Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures is possible.

**Explosion limits:**

Lower:	2 Vol %
Upper:	95 Vol %

**Vapor pressure at 20 °C (68 °F):** 137 hPa (103 mm Hg)

**Density at 20 °C (68 °F):** 0.78 g/cm³ (6.509 lbs/gal)

**Relative density:** Not determined.

**Vapor density:** Not determined.

**Evaporation rate:** Not determined.

**Solubility in / Miscibility with**

Water:	Partly miscible
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**Partition coefficient (n-octanol/water):** Not determined.

**Viscosity:**

dynamic:	Not determined.
kinematic:	Not determined.

**Product name:** *N,N*-Dimethylhydrazine

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**Other information** No further relevant information available.

**10 Stability and reactivity**

**Reactivity** No information known.  
**Chemical stability** Stable under recommended storage conditions.  
**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.  
**Possibility of hazardous reactions** Reacts with oxidizing agents  
**Conditions to avoid** No further relevant information available.  
**Incompatible materials:** Oxidizing agents  
**Hazardous decomposition products:**  
Nitrogen oxides  
Carbon monoxide and carbon dioxide

**11 Toxicological information**

**Information on toxicological effects**  
**Acute toxicity:**  
Fatal if inhaled.  
Toxic if swallowed.  
Fatal if inhaled.  
Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.  
**LD/LC50 values that are relevant for classification:**  

Oral	LD50	122 mg/kg (rat)
Inhalative	LC50/4H	252 mg/m <sup>3</sup> /4H (rat)

  
**Skin irritation or corrosion:** Causes severe skin burns.  
**Eye irritation or corrosion:** Causes serious eye damage.  
**Sensitization:** No sensitizing effects known.  
**Germ cell mutagenicity:** No effects known.  
**Carcinogenicity:**  
May cause cancer.  
IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.  
NTP-R: 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 this substance.  
**Reproductive toxicity:** No effects known.  
**Specific target organ system toxicity - repeated exposure:** No effects known.  
**Specific target organ system toxicity - single exposure:** No effects known.  
**Aspiration hazard:** No effects known.  
**Other information (about experimental toxicology):** Tumorigenic effects have been observed on tests with laboratory animals.  
**Subacute to chronic toxicity:** No effects known.  
**Subacute to chronic toxicity:**  
*N,N*-Dimethylhydrazine can cause convulsions resulting in death, CNS stimulation, damage to the kidneys and liver, genetic damage, pulmonary edema and hemolytic anemia.  
**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**12 Ecological information**

**Toxicity**  
**Aquatic toxicity:** No further relevant information available.  
**Persistence and degradability** No further relevant information available.  
**Bioaccumulative potential** No further relevant information available.  
**Mobility in soil** No further relevant information available.  
**Ecotoxicological effects:**  
**Remark:** Toxic for aquatic organisms  
**Additional ecological information:**  
**General notes:**  
Do not allow material to be released to the environment without proper governmental permits.  
Toxic for aquatic organisms  
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.  
Toxic to aquatic life.  
May cause long lasting harmful effects to aquatic life.  
Avoid transfer into the environment.  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable.  
**Other adverse effects** No further relevant information available.

**13 Disposal considerations**

**Waste treatment methods**  
**Recommendation** Consult state, local or national regulations to ensure proper disposal.  
**Uncleaned packagings:**  
**Recommendation:** Disposal must be made according to official regulations.

**14 Transport information**

<b>UN-Number</b> <b>DOT, IMDG, IATA</b>	UN1163
<b>UN proper shipping name</b> <b>DOT</b> <b>IMDG, IATA</b>	RQ Dimethylhydrazine, unsymmetrical DIMETHYLHYDRAZINE, UNSYMMETRICAL

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USA

**Product name: N,N-Dimethylhydrazine**

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**Transport hazard class(es)**

**DOT**



**Class** 6.1 Toxic substances.  
**Label** 6.1 + 3 + 8  
**Class** 6.1 (TFC) Toxic substances  
**Label** 6.1+3+8  
**IMDG, IATA**



**Class** 6.1 Toxic substances.  
**Label** 6.1 + 3 + 8

**Packing group**  
**DOT, IMDG, IATA**

I

**Environmental hazards:**

Environmentally hazardous substance, liquid

**Special precautions for user**

Warning: Toxic substances

**Poison inhalation hazard:**

Yes

**Segregation groups**

Alkalis

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

**Transport/Additional information:**

**DOT**  
**Hazardous substance:** 10 lbs, 4.54 kg  
**Marine Pollutant (DOT):** No

**UN "Model Regulation":** UN1163, Dimethylhydrazine, unsymmetrical, 6.1 (3+8), I

**15 Regulatory information**

**Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)  
**Hazard pictograms**



GHS02 GHS05 GHS06 GHS08

**Signal word** Danger

**Hazard statements**

H225 Highly flammable liquid and vapor.

H301 Toxic if swallowed.

H330 Fatal if inhaled.

H314 Causes severe skin burns and eye damage.

H350 May cause cancer.

**Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor/...

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P320 Specific treatment is urgent (see on this label).

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations**

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

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

**SARA Section 313 (specific toxic chemical listings)**

57-14-7 N,N-Dimethylhydrazine

**California Proposition 65**

**Prop 65 - Chemicals known to cause cancer**

57-14-7 N,N-Dimethylhydrazine

**Prop 65 - Developmental toxicity** Substance is not listed.

**Prop 65 - Developmental toxicity, female** Substance is not listed.

**Prop 65 - Developmental toxicity, male** Substance is not listed.

**Information about limitation of use:**

Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

For use only by technically qualified individuals.

**Other regulations, limitations and prohibitive regulations**

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.

**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**

Substance is not listed.

**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is not listed.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**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 SDS:** Global Marketing Department

**Date of preparation / last revision** 11/23/2015 / -

**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)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

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USA



Product name: **N,N-Dimethylhydrazine**

IATA: International Air Transport Association  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
HMIS: Hazardous Materials Identification System (USA)  
WHMIS: Workplace Hazardous Materials Information System (Canada)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
vPvB: very Persistent and very Bioaccumulative  
ACGIH: American Conference of Governmental Industrial Hygienists (USA)  
OSHA: Occupational Safety and Health Administration (USA)  
NTP: National Toxicology Program (USA)  
IARC: International Agency for Research on Cancer  
EPA: Environmental Protection Agency (USA)

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