SAFETY DATA SHEET

1. Identification

Product Name
Hydrazine hydrate, 80% (Hydrazine, 51%)

Cat No. :
AC209590000; AC209590010; AC209592500

Synonyms
None.

Recommended Use
Laboratory chemicals.

Uses advised against
No Information available

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids
Category 4

Acute oral toxicity
Category 3

Acute dermal toxicity
Category 3

Acute Inhalation Toxicity - Dusts and Mists
Category 3

Skin Corrosion/irritation
Category 1 B

Serious Eye Damage/Eye Irritation
Category 1

Skin Sensitization
Category 1

Carcinogenicity
Category 1B

Label Elements

Signal Word
Danger

Hazard Statements
Combustible liquid
Toxic if swallowed
Toxic in contact with skin
Causes severe skin burns and eye damage
May cause an allergic skin reaction
Toxic if inhaled
May cause cancer
Causes serious eye damage
Precautionary Statements

Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep cool
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection

Response
IF exposed or concerned: Get medical attention/advice

Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician

Skin
Wash contaminated clothing before reuse
IF ON SKIN: Wash with plenty of soap and water
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Immediately call a POISON CENTER or doctor/physician
Take off contaminated clothing and wash before reuse

Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician

Ingestion
Rinse mouth
Do NOT induce vomiting
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

Fire
In case of fire: Use CO2, dry chemical, or foam for extinction

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

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects

3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrazine (hydrate)</td>
<td>10217-52-4</td>
<td>80</td>
</tr>
</tbody>
</table>
4. First-aid measures

Eye Contact
Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation
Remove from exposure, lie down. Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Immediate medical attention is required.

Ingestion
Do not induce vomiting. Call a physician or Poison Control Center immediately.

Most important symptoms/effects
Breathing difficulties. Causes burns by all exposure routes. May cause allergic skin reaction. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.

Notes to Physician
Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media
Water spray. Carbon dioxide (CO₂). Dry chemical. chemical foam.

Unsuitable Extinguishing Media
No information available

Flash Point
91 °C / 195.8 °F

Method -
No information available

Autoignition Temperature
310 °C / 590 °F

Explosion Limits
Upper 100%
Lower 4.7%

Sensitivity to Mechanical Impact
No information available

Sensitivity to Static Discharge
No information available

Specific Hazards Arising from the Chemical
Combustible material. Flammable.

Hazardous Combustion Products
Nitrogen oxides (NOx) Ammonia Hydrogen

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

<table>
<thead>
<tr>
<th></th>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical hazards</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>N/A</td>
</tr>
</tbody>
</table>

6. Accidental release measures

Personal Precautions
Ensure adequate ventilation. Use personal protective equipment.

Environmental Precautions
See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage.
Methods for Containment and Clean Up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Do not flush into surface water or sanitary sewer system. Avoid dust formation. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling

Wear personal protective equipment. Ensure adequate ventilation. Do not breathe dust. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Use only in area provided with appropriate exhaust ventilation.

Storage


8. Exposure controls / personal protection

Exposure Guidelines

This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection

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.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State

Liquid

Appearance

Colorless

Odor

Ammonia-like

Odor Threshold

No information available

pH

12 640 g/l aq.sol

Melting Point/Range

-57 °C / -76.6 °F

Boiling Point/Range

117.2 °C / 243 °F

Flash Point

91 °C / 195.8 °F

Evaporation Rate

No information available

Flammability (solid, gas)

No information available

Flammability or explosive limits

Upper

100%

Lower

4.7%

Vapor Pressure

13 mbar @ 20 °C

Vapor Density

1.1 @ 15 °C

Relative Density

1.028

Solubility

No information available

Partition coefficient; n-octanol/water

No data available

Autoignition Temperature

310 °C / 590 °F

Decomposition Temperature

No information available

Viscosity

1.33 mPa.s at 20 °C
Hydrazine hydrate, 80% (Hydrazine, 51%)

**Molecular Formula**
H4 N2 . x H2 O

**Molecular Weight**
32.04

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**10. Stability and reactivity**

**Reactive Hazard**
None known, based on information available

**Stability**
Do not allow evaporation to dryness. Air sensitive.

**Conditions to Avoid**
Exposure to air. Incompatible products.

**Incompatible Materials**
Acids, Bases, Powdered metal salts, Halogens, nitrogen oxides (NOx), Organic materials, Peroxides, lead, Metals, copper, Butyl rubber

**Hazardous Decomposition Products**
Nitrogen oxides (NOx), Ammonia, Hydrogen

**Hazardous Polymerization**
Hazardous polymerization does not occur.

**Hazardous Reactions**
None under normal processing.

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**11. Toxicological information**

**Acute Toxicity**

- **Oral LD50**
  Category 3. ATE = 50 - 300 mg/kg.

- **Dermal LD50**
  Category 3. ATE = 200 - 1000 mg/kg.

- **Vapor LC50**
  Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.

**Component Information**

**Toxicologically Synergistic Products**
No information available

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Irritation**
No information available

**Sensitization**
May cause sensitization by skin contact

**Carcinogenicity**
May cause cancer.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
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<td>10217-52-4</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**Mutagenic Effects**
No information available

**Reproductive Effects**
No information available.

**Developmental Effects**
No information available.

**Teratogenicity**
No information available.

**STOT - single exposure**
None known

**STOT - repeated exposure**
None known

**Aspiration hazard**
No information available

**Symptoms / effects, both acute and delayed**
Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

**Endocrine Disruptor Information**
No information available
Other Adverse Effects

See actual entry in RTECS for complete information.

### 12. Ecological information

**Ecotoxicity**

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Do not empty into drains.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
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<tr>
<td>Hydrazine (hydrate)</td>
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<td>Not listed</td>
<td>EC50 = 0.01 mg/L 15 min</td>
<td>Not listed</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>EC50 = 0.01 mg/L 20 min</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EC50 = 0.02 mg/L 5 min</td>
<td></td>
</tr>
</tbody>
</table>

**Persistence and Degradability**

No information available

**Bioaccumulation/ Accumulation**

No information available

**Mobility**

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### 13. Disposal considerations

**Waste Disposal Methods**

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

### 14. Transport information

#### DOT

- **UN-No**: UN2030
- **Proper Shipping Name**: HYDRAZINE, AQUEOUS SOLUTION
- **Hazard Class**: 8
- **Subsidiary Hazard Class**: 6.1
- **Packing Group**: II

#### TDG

- **UN-No**: UN2030
- **Proper Shipping Name**: HYDRAZINE, AQUEOUS SOLUTION
- **Hazard Class**: 8
- **Subsidiary Hazard Class**: 6.1
- **Packing Group**: II

#### IATA

- **UN-No**: UN2030
- **Proper Shipping Name**: HYDRAZINE, AQUEOUS SOLUTION
- **Hazard Class**: 8
- **Subsidiary Hazard Class**: 6.1
- **Packing Group**: II

#### IMDG/IMO

- **UN-No**: UN2030
- **Proper Shipping Name**: HYDRAZINE, AQUEOUS SOLUTION
- **Hazard Class**: 8
- **Subsidiary Hazard Class**: 6.1
- **Packing Group**: II

### 15. Regulatory information

**International Inventories**

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
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<tbody>
<tr>
<td>Hydrazine (hydrate)</td>
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<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
</tr>
</tbody>
</table>

**Legend:**

- X - Listed
- E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
- F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
Hydrazine hydrate, 80% (Hydrazine, 51%)

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable
SARA 313 Not applicable

SARA 311/312 Hazardous Categorization

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Yes / No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Health Hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Chronic Health Hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Sudden Release of Pressure Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>No</td>
</tr>
</tbody>
</table>

Clean Water Act Not applicable
Clean Air Act Not applicable
OSHA Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals
State Right-to-Know Not applicable

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Description</th>
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<tbody>
<tr>
<td>B3</td>
<td>Combustible liquid</td>
</tr>
<tr>
<td>D1A</td>
<td>Very toxic materials</td>
</tr>
<tr>
<td>E</td>
<td>Corrosive material</td>
</tr>
<tr>
<td>D2A</td>
<td>Very toxic materials</td>
</tr>
</tbody>
</table>

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16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 11-Sep-2014
Revision Date 05-Dec-2014
Print Date 05-Dec-2014
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer
The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS