MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name: PYRIDINE
Version #: 02
Revision date: 08-29-2011
CAS #: 110-86-1
Product Codes:
J.T.Baker: 3348, 3352, 9393
Macron: 7180, 7181

Synonym(s): Azabenzene

Manufacturer:
Avantor Performance Materials, Inc.
3477 Corporate Parkway
Suite #200
Center Valley, PA 18034
US

Customer Service:
855-282-6867

24 Hour Emergency:
908-859-2151
Chemtrec:
800-424-9300

2. Hazards Identification

Emergency overview:
DANGER
Flammable liquid and vapor. Will be easily ignited by heat, spark or flames.
Harmful if inhaled, absorbed through skin, or swallowed. Causes eye burns. Causes skin irritation.
Mist or vapor extremely irritating to eyes and respiratory tract. Vapors may cause drowsiness and dizziness. Prolonged exposure may cause chronic effects.

OSHA regulatory status:
This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects:
Routes of exposure:
Inhalation. Ingestion. Skin contact. Eye contact.

Eyes:
Substance causes severe eye irritation; injury may be permanent. High vapor/aerosol concentrations may be irritating.

Skin:
Harmful if absorbed through skin. Causes skin irritation. Prolonged skin contact causes burns. May cause photosensitization, evidenced by repeated occurrence of a dermatitic rash on exposure to sunlight.

Inhalation:
Harmful if inhaled. Can cause severe respiratory irritation. Symptoms of overexposure may include headache, drowsiness, nausea, vomiting, blurred vision, blindness, coma and death. In high concentrations, vapors and aerosol mists have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

Ingestion:
Harmful if swallowed. Ingestion may cause severe irritation of the mouth, the esophagus and the gastrointestinal tract. Symptoms of overexposure may include headache, drowsiness, nausea, vomiting, blurred vision, blindness, coma and death.

Target organs:

Chronic effects:
Can cause liver damage. Can cause kidney damage. Organic solvents may be absorbed into the body by inhalation and ingestion and cause permanent damage to the nervous system, including the brain. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Potential environmental effects:
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
### 3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRIDINE</td>
<td>110-86-1</td>
<td>99 - 100</td>
</tr>
</tbody>
</table>

### 4. First Aid Measures

#### First aid procedures

**Eye contact**

Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention immediately. In case of irritation from airborne exposure, move to fresh air. Get medical attention.

**Skin contact**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

**Inhalation**

Move to fresh air. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration. Get medical attention immediately.

**Ingestion**

Call a physician or poison control center immediately. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs.

**Notes to physician**

Treat symptomatically. Symptoms may be delayed.

**General advice**

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

### 5. Fire Fighting Measures

#### Flammable properties

HIGHLY FLAMMABLE! Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Heat may cause the containers to explode.

#### Extinguishing media

- **Suitable extinguishing media**

- **Unsuitable extinguishing media**
  - Do not use water jet as an extinguisher, as this will spread the fire.

#### Protection of firefighters

**Specific hazards arising from the chemical**

Can be ignited easily and burns vigorously. Vapor from the solvent may accumulate in container headspace resulting in flammability hazard.

**Protective equipment and precautions for firefighters**

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Move containers from fire area if you can do so without risk. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Some of these materials, if spilled, may evaporate leaving a flammable residue. Cool containers exposed to flames with water until well after the fire is out.

**Special protective equipment for fire-fighters**

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

**Specific methods**

In the event of fire and/or explosion do not breathe fumes. Use water spray to cool unopened containers.

**Hazardous combustion products**

Carbon monoxide and carbon dioxide.

### 6. Accidental Release Measures

#### Personal precautions

Wear appropriate protective equipment and clothing during clean-up. Keep unnecessary personnel away. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Local authorities should be advised if significant spillages cannot be contained.

#### Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.
Methods for containment

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas. Dike the spilled material, where this is possible.

Methods for cleaning up

Use only non-sparking tools. All equipment used when handling the product must be grounded.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Dike far ahead of spill for later disposal.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Collect in a non-combustible container for prompt disposal.

Never return spills in original containers for re-use. Clean surface thoroughly to remove residual contamination. Clean up in accordance with all applicable regulations.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

7. Handling and Storage

Handling

DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Wear appropriate personal protective equipment. Do not breathe mist or vapor. Do not get in eyes and avoid contact with skin and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment.

Storage

Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children. Keep container tightly closed in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

8. Exposure Controls / Personal Protection

ACGIH

Material | Type | Value |
---|---|---|
PYRIDINE (110-86-1) | TWA | 1.0000 ppm |

Occupational exposure limits

<table>
<thead>
<tr>
<th>U.S. - OSHA</th>
<th>Material</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRIDINE (110-86-1)</td>
<td>PEL</td>
<td>5.0000 ppm</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>15.0000 mg/m3</td>
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</table>

Engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Explosion proof exhaust ventilation should be used.

Personal protective equipment

Eye / face protection

Chemical goggles and face shield are recommended.

Skin protection

Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves.

Respiratory protection

Respirator type: Chemical respirator with organic vapor cartridge and full facepiece. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

General hygiene considerations

Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
9. Physical & Chemical Properties

**Appearance**  
Colorless to Yellow Liquid.

**Color**  
Colorless. Yellow.

**Odor**  
Burnt Pungent.

**Odor threshold**  
Not available.

**Physical state**  
Liquid.

**Form**  
Liquid.

**pH**  
8.5 (0.2 M Solution)

**Melting point**  
-43.6 °F (-41.6 °C)

**Freezing point**  
-43.6 °F (-41.6 °C)

**Boiling point**  
239 °F (115.2 °C)

**Flash point**  
68 °F (20 °C) Closed Cup

**Evaporation rate**  
Not available.

**Flammability limits in air, upper, % by volume**  
12.4 %

**Flammability limits in air, lower, % by volume**  
1.8 %

**Vapor pressure**  
2.77306 kPa at 25°C

**Vapor density**  
0.982

**Specific gravity**  
0.9827

**Relative density**  
Not available.

**Solubility (water)**  
Miscible

**Partition coefficient (n-octanol/water)**  
0.65

**Auto-ignition temperature**  
899.6 °F (482 °C)

**Molecular weight**  
79.1 g/mol

**Molecular formula**  
C5-H5-N

10. Chemical Stability & Reactivity Information

**Chemical stability**  
Stable under normal temperature conditions.

**Conditions to avoid**  
Heat, sparks, flames.

**Incompatible materials**  

**Hazardous decomposition products**  
Carbon monoxide. Carbon Dioxide. Nitrogen oxides (NOx).

**Possibility of hazardous reactions**  
Hazardous polymerization does not occur.

11. Toxicological Information

**Toxicological data**

<table>
<thead>
<tr>
<th>Product</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRIDINE (110-86-1)</td>
<td>Acute Dermal LD50 Rabbit: 1121 mg/kg</td>
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<tr>
<td></td>
<td>Acute Inhalation LC50 Rat: 4000 ppm 4.00 Hours</td>
</tr>
<tr>
<td></td>
<td>Acute Oral LD50 Rat: 891 mg/kg</td>
</tr>
</tbody>
</table>

**Sensitization**  
Not a skin sensitizer.

**Acute effects**  
Harmful if inhaled, absorbed through skin, or swallowed.

**Local effects**  
Causes eye burns. Causes skin irritation. Mist or vapor extremely irritating to eyes and respiratory tract. Vapors may cause drowsiness and dizziness.
Chronic effects
Can cause liver damage. Can cause kidney damage. Organic solvents may be absorbed into the body by inhalation and ingestion and cause permanent damage to the nervous system, including the brain. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Carcinogenicity
Not classifiable as to carcinogenicity to humans. Possible cancer hazard based on tests with laboratory animals. Risk of cancer cannot be excluded with prolonged exposure.

ACGIH Carcinogens
PYRIDINE (CAS 110-86-1) A3 Confirmed animal carcinogen with unknown relevance to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity
PYRIDINE (CAS 110-86-1) 3 Not classifiable as to carcinogenicity to humans.

Skin corrosion/irritation
Causes skin irritation.

Epidemiology
No epidemiological data is available for this product.

Mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Neurological effects
High vapor/aerosol concentrations (attainable only at elevated temperatures) may cause central nervous system effects such as dizziness, drowsiness or headaches. Central and/or peripheral nervous system damage.

Reproductive effects
Contains no ingredient listed as toxic to reproduction

Teratogenicity
No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Symptoms and target organs
Severe eye irritation. Corneal damage. Moderate skin irritation. Upper respiratory tract irritation. Drowsiness and dizziness.

12. Ecological Information

Ecotoxicological data
Product: PYRIDINE (110-86-1)

Test Results
LC50 Pink salmon (Oncorhynchus gorbuscha): 1.1 mg/l 96.00 hours

Ecotoxicity
Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the environment.

Environmental effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Persistence and degradability
The product is not readily biodegradable. The product is expected to be slowly biodegradable.

Partition coefficient
(n-octanol/water) 0.65

Disposal Considerations

Waste codes
US RCRA Hazardous Waste U List: Reference
PYRIDINE (CAS 110-86-1) U196

Disposal instructions
Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. All wastes must be handled in accordance with local, state and federal regulations.

Contaminated packaging
Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container. Offer rinsed packaging material to local recycling facilities.

14. Transport Information

DOT
Basic shipping requirements:
UN number UN1282
Proper shipping name: Pyridine
Hazard class: 3
Packing group: II
Environmental hazards: Yes
Marine pollutant: Yes

Additional information:
Special provisions: IB2, T4, TP2

Basic shipping requirements:
Labels required: 3

Packaging exceptions: None
Packaging non bulk: 202
Packaging bulk: 242
Reportable quantity: 1000
ERG number: 129

IATA
Basic shipping requirements:
UN number: 1282
Proper shipping name: Pyridine
Hazard class: 3
Packing group: II
Environmental hazards: Yes
Marine pollutant: Yes
ERG code: 3L

IMDG
Basic shipping requirements:
UN number: 1282
Proper shipping name: PYRIDINE
Hazard class: 3
Packing group: II
Environmental hazards: Yes

15. Regulatory Information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration
PYRIDINE (CAS 110-86-1) 1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance
PYRIDINE (CAS 110-86-1) Listed.
CERCLA (Superfund) reportable quantity
PYRIDINE: 1000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 311 hazardous chemical
Yes

Inventory status

Country(s) or region | Inventory name | On inventory (yes/no)*
---|---|---
Australia | Australian Inventory of Chemical Substances (AICS) | Yes
Canada | Domestic Substances List (DSL) | Yes
Canada | Non-Domestic Substances List (NDSL) | No
China | Inventory of Existing Chemical Substances in China (IECSC) | Yes
Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes
Europe | European List of Notified Chemical Substances (ELINCS) | No
Japan | Inventory of Existing and New Chemical Substances (ENCS) | Yes
Korea | Existing Chemicals List (ECL) | Yes
New Zealand | New Zealand Inventory | Yes
Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes
United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes

*A “Yes” indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
PYRIDINE (CAS 110-86-1) Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance
PYRIDINE (CAS 110-86-1) Listed: May 17, 2002 Carcinogenic.

US - New Jersey Community RTK (EHS Survey): Reportable threshold
PYRIDINE (CAS 110-86-1) 500 LBS

US - Pennsylvania RTK - Hazardous Substances: Listed substance
PYRIDINE (CAS 110-86-1) Listed.

Saf-T-Data

Health: 3 - Severe (Cancer Causing)
Flammability: 3 - Severe (Flammable)
Reactivity: 1 - Slight
Contact: 3 - Severe
Lab Protective Equip: DB - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: R - Red (Flammable)

16. Labeling Info

Label Hazard Warning
DANGER

FLAMMABLE LIQUID AND VAPOR. Will be easily ignited by heat, spark or flames. Causes eye burns. Causes skin irritation. Mist or vapor extremely irritating to eyes and respiratory tract. Vapors may cause drowsiness and dizziness. Prolonged exposure may cause chronic effects.

Label Precautions
Keep away from heat, sparks and flame. Do not breathe mist or vapor. Do not get in eyes and avoid contact with skin and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.
Label First Aid
Immediately flush eyes with plenty of water for at least 15 minutes. Immediately flush skin with plenty of water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention immediately. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Do not use mouth-to-mouth method if victim ingested the substance. If vomiting occurs, keep head low so that stomach content doesn’t get into the lungs.

17. Other Information

NFPA ratings
- Health: 3
- Flammability: 3
- Instability: 0

Disclaimer
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Issue date
08-29-2011

This data sheet contains changes from the previous version in section(s):
Exposure Controls / Personal Protection: Respiratory protection