

SAFETY DATA SHEET

Preparation Date: No data available

Revision Date: 02/26/2015

Revision Number: G1

Product identifier

Product code: PI123
Product Name: PIPERAZINE, ANHYDROUS

Other means of identification

Synonyms: 1,4-Diethylenediamine; Hexahydro-1,4-diazine; Hexahydropyrazine; Pyrazine hexahydride; Pyrazine, hexahydro-
CAS #: 110-85-0
RTECS # TK7800000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.
Uses advised against No information available

Supplier: Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: <https://www.spectrumchemical.com>

Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

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

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Respiratory sensitization	Category 1
Skin sensitization	Category 1

Label elements

Danger

Hazard statements

Harmful if swallowed
Causes severe skin burns and eye damage
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

May be harmful in contact with skin

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace

Precautionary Statements - Response

Immediately call a POISON CENTER or doctor/physician
Specific treatment (see .? on this label)
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.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
If skin irritation or rash occurs: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Do NOT induce vomiting

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %	Trade Secret
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Piperazine, Anhydrous 110-85-0	110-85-0	100	*
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4. FIRST AID MEASURES

First aid measures

General Advice:

Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Skin Contact:

Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.

Eye Contact:

Flush eye with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

Inhalation:

Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **WARNING!** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion:

Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Immediate medical attention is required.

Most important symptoms and effects, both acute and delayed

Symptoms

Causes skin and eye burns. Harmful if swallowed. May cause allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May be harmful if absorbed through skin.

Indication of any immediate medical attention and special treatment needed

Notes to Physician:

Treat symptomatically

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media:

Carbon dioxide (CO₂). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media:

No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products:

Carbon oxides, Nitrogen oxides

Specific hazards:

May be combustible at high temperatures.

Special Protective Actions for Firefighters

Specific Methods:

No information available.

Special Protective Equipment for Firefighters:

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Sweep up and shovel into suitable containers for disposal. Use only non-sparking tools. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Minimize dust generation and accumulation. Keep away from incompatible materials. Do not allow contact with water.

Safe Handling Advice:

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe vapours/dust. Keep away from heat and sources of ignition. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Hygroscopic. Sensitive to light. Store in light-resistant containers. Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:

Oxidizing agents. Acids. Nitrogen compounds. Carbon tetrachloride. Metals. Aluminum. Copper. Copper alloys. Zinc. Nickel. magnesium. Cobalt. chlorinated hydrocarbons.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	OSHA	NIOSH	ACGIH	AIHA WHEEL
Piperazine, Anhydrous - 110-85-0	None	None	None	None

Canada

Components	Alberta	British Columbia	Ontario	Quebec

Piperazine, Anhydrous - 110-85-0	None	= 0.3 mg/m ³ TWA	None	None
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Australia and Mexico

Components	Australia	Mexico
Piperazine, Anhydrous 110-85-0	None	None

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

- Eye protection:** Goggles. Safety glasses with side-shields.
- Skin and body protection:** Long sleeved clothing. Chemical resistant apron. Gloves.
- Respiratory protection:** Effective dust mask. Wear respirator with dust filter..
- Hygiene measures:** Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

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Physical state: Solid.	Appearance: No information available	Color: Colorless.
Odor: Characteristic. Amine-like. Ammoniacal.	Taste Saline.	Formula: C4H10N2
Molecular/Formula weight: 86.14	Flash point (°C): 107	Flashpoint (°C/°F): 107°C/224.6°F
Flash Point Tested according to: Open cup	Lower Explosion Limit (%): 1.6	Upper Explosion Limit (%): 12.5
Autoignition Temperature (°C/°F): 454.97°C/850.9°F	pH: No information available	Melting point/range(°C/°F): 106°C/222.8°F
Boiling point/range(°C/°F): 146°C/294.8°F	Decomposition temperature(°C/°F): No information available	Bulk density: No information available
Specific gravity: 1.1	Vapor pressure @ 20°C (kPa): No information available	Density (g/cm3): No information available
Evaporation rate: No information available	Vapor density: 3	VOC content (g/L): No information available
Odor threshold (ppm): No information available	Partition coefficient (n-octanol/water): -1.2	Viscosity: No information available
Miscibility: No information available	Solubility: Easily soluble in cold water Insoluble in diethyl ether Freely soluble in glycerol Freely soluble in glycols	

10. STABILITY AND REACTIVITY

Reactivity

Reactive with acids
Reactive with oxidizing agents
Violent reaction with strong oxidizers and dicyanofurazan
Attacks aluminum, copper, nickel, magnesium, zinc

Chemical stability

Stability: Stable at normal conditions. Hygroscopic. Sensitive to light. Exposure to light accelerates decomposition.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Incompatible materials. Exposure to light. Exposure to moisture. Exposure to moist air.

Incompatible Materials: Oxidizing agents. Acids. Nitrogen compounds. Carbon tetrachloride. Metals. Aluminum. Copper. Copper alloys. Zinc. Nickel. magnesium. Cobalt. chlorinated hydrocarbons.

Hazardous decomposition products: When heated to decomposition it emits toxic fumes. Carbon oxides. Nitrogen oxides (NOx).

Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:

Ingestion. Inhalation. Skin.

Acute Toxicity

Component Information

Piperazine, Anhydrous - 110-85-0

LD50/oral/rat = 1900 mg/kg Oral LD50 Rat

LD50/oral/mouse = 600 mg/kg Oral LD50 Mouse

LD50/dermal/rabbit = 4 mL/kg Dermal LD50Rabbit

LD50/dermal/rat = No information available

LC50/inhalation/rat = No information available

LC50/inhalation/mouse = 5400 mg/m³/2H Inhalation LD50 Mouse

Other LD50 or LC50 information = No information available

Product Information

LD50/oral/rat =

VALUE- Acute Tox Oral = 1900mg/kg

LD50/oral/mouse =

Value - Acute Tox Oral = 600mg/kg

LD50/dermal/rabbit

VALUE-Acute Tox Dermal = 4000mg/kg

LD50/dermal/rat

VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat

VALUE-Vapor = No information available

VALUE-Gas = No information available

VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse

VALUE-Vapor = No information available

VALUE - Gas = No information available

VALUE - Dust/Mist = 5400 mg/m³/2H

Symptoms

Skin Contact:

Contact causes severe skin irritation and possible burns. May cause allergic skin reaction. It may be absorbed through the skin. May be harmful in contact with skin.

Eye Contact:

Causes serious eye irritation. Causes eye burns.

Inhalation May cause respiratory tract irritation (irritation of bronchial tubes, lungs) wheezing, severe hacking cough, and shortness of breath (dypnea). Inhalation of high concentrations can affect behavior/central nervous system, and vision and cause weakness, reduced coordination, and balance, lethargy, tremors, trigger seizures (epileptic attacks), and blurred vision. It can also interfere with the ability of the blood to carry oxygen (a condition called methemoglobinemia). This can cause headaches, dizziness, nausea, and a bluish color to the skin and lips. May cause allergic respiratory reaction.

Ingestion Harmful if swallowed. It can cause digestive tract irritation with possible burns, nausea, vomiting, clonic spasms, diarrhea. It can cause vague ocular disturbances, urticaria, and affect behavior/central nervous system with symptoms similar to those of acute inhalation as well as euphoria, inability to think clearly, and/or hallucinations, dropping of objects, loss of consciousness, dysarthria, apraxia, dysphagia, vertigo. It may affect the liver, respiration, cardiovascular system.

Aspiration hazard No information available

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

Chronic Toxicity Repeated or prolonged skin contact may cause skin sensitization
 Prolonged or repeated skin contact may cause allergic reaction
 Prolonged or repeated inhalation may cause allergic reaction
 Prolonged or repeated inhalation may cause asthma-like allergy and asthma attacks with shortness of breath, wheezing, coughing, and/or chest tightness

Sensitization: May cause sensitization by inhalation and skin contact

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic

Components	ACGIH - Carcinogens	IARC	NTP	OSHA HCS - Carcinogens	Australia - Prohibited Carcinogenic Substances	Australia - Notifiable Carcinogenic Substances
Piperazine, Anhydrous	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available
STOT - repeated exposure No information available
Target Organs: Lungs. Skin. Respiratory system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

12. ECOLOGICAL INFORMATION

Ecotoxicity effects: Aquatic environment.

Piperazine, Anhydrous - 110-85-0

Freshwater Fish Species Data: 10000 mg/L LC50 *Lepomis macrochirus* 96 h static 1

Water Flea Data: 6915 mg/L EC50 water flea 96 h

Persistence and degradability: No information available

Bioaccumulative potential: No information available

Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Piperazine, Anhydrous	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN2579
Proper Shipping Name: Piperazine
Hazard Class: 8
Subsidiary Risk:
Packing Group: III
ERG No: 153
Marine Pollutant: No data available
DOT RQ (lbs): No information available

Symbol(s):

TDG (Canada)

UN-No: UN2579
Proper Shipping Name: Piperazine
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Description: No information available

ADR

UN-No: UN2579
Proper Shipping Name: Piperazine
Hazard Class: 8
Packing Group: III

14. TRANSPORT INFORMATION

Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG

UN-No: UN2579
Proper Shipping Name: Piperazine
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Description: No information available
IMDG Page: No information available
Marine Pollutant: No information available
EMS: F-A
MFAG: No information available
Maximum Quantity: No information available

RID

UN-No: UN2579
Proper Shipping Name: Piperazine
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Classification Code: No information available
Description: No information available

ICAO

UN-No: UN2579
Proper Shipping Name: Piperazine
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Description: No information available

IATA

UN-No: UN2579
Proper Shipping Name: Piperazine
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
ERG Code: 8L
Description: No information available

15. REGULATORY INFORMATION

International Inventories

Components	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
<i>Piperazine, Anhydrous</i>	Present	Present KE-28758	Present	Present (5)-953	Present[25516]	Present	Present 203-808-3

U.S. Regulations

Piperazine, Anhydrous

Massachusetts RTK: Present

New Jersey RTK Hazardous Substance List: Present

Pennsylvania RTK: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Piperazine, Anhydrous	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting <i>de minimis</i>
Piperazine, Anhydrous	None	None	None	None	None

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Piperazine, Anhydrous	Not Applicable	Not Applicable

Canada

WHMIS hazard class:

E Corrosive material

Canada Controlled Products Regulation:

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Components	WHMIS Ingredient Disclosure List -
Piperazine, Anhydrous	0.1 %

Inventory

Components	Canada (DSL)	Canada (NDSL)
Piperazine, Anhydrous	Present	Not Listed

Components	CEPA Schedule I - Toxic Substances	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Piperazine, Anhydrous	Not listed	Not listed

EU Classification

Product code: PI123

Product name: PIPERAZINE,
ANHYDROUS

11 / 13

R-phrase(s)

R34 - Causes burns.

R62 - Possible risk of impaired fertility.

R63 - Possible risk of harm to the unborn child.

R42/43 - May cause sensitization by inhalation and skin contact.

S -phrase(s)

S22 - Do not breathe dust.

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 1/2 - Keep locked up and out of the reach of children.

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

Components	Classification	Concentration Limits:	Safety Phrases
Piperazine, Anhydrous	C; R34 R42/43 Repr.Cat.3; R62-63	No information	S1/2 S22 S26 S36/37/39 S45

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

C - Corrosive.

**16. OTHER INFORMATION**

16. OTHER INFORMATION

Revision Date: 02/26/2015
Prepared by: Sonia Owen

Disclaimer: All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet