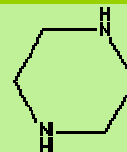


PIPERAZINE

PRODUCT IDENTIFICATION

CAS NO.	110-85-0
EINECS NO.	203-808-3
FORMULA	NHCH ₂ CH ₂ NHCH ₂ CH ₂
MOL WT.	86.14
H.S. CODE	2933.59.9500
TOXICITY	Oral, rat LD50: 1900 mg/kg
SYNONYMS	Diethylenediamine; Diethyleneimine; Dispermine; Antiren; Hexahydropyrazine; Piperazidine; Pipersol; Pyrazine hexahydride; Uvilon; 1,4-Diazacyclohexane; 1,4-Piperazine; 1,4-Diethylenediamine; Piperazin (German); N,N-Diethylenediamine; Hexahydro-1,4-diazine; Piperazidine; Pyrazine hexahydrate; Piperazin (German); Piperazina (Spanish); Pip��razine (French); Other RN: 8017-90-1, 8027-81-4, 81546-15-8, 854880-15-2, 861800-35-3
SMILES	C1CNCCN1
CLASSIFICATION	Piperazine, Anthelmintic
EXTRA NOTES	



PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	White flake Ammonia like odor
MELTING POINT	108 C
BOILING POINT	145 - 146 C
SPECIFIC GRAVITY	1.1
SOLUBILITY IN WATER	150 g/l at 20 C
SOLVENT SOLUBILITY	Freely soluble in glycerol
VAPOR DENSITY	3.0
AUTOIGNITION	340 C
pKa	9.73 (Dissociation Constant at 25 C)
log P	-1.50E+00 (Octanol-water)
VAPOR PRESSURE	0.16 (mmHg at 25 C)
HENRY LAW CONSTANT	2.20E-09 (atm-m ³ /mole at 25 C)
OH RATE CONSTANT	1.69E-10 (cm ³ /molecule-sec at 25 C Atmospheric)
NFPA RATINGS	Health: 2 ; Flammability: 2 ; Reactivity: 0
REFRACTIVE INDEX	
FLASH POINT	
STABILITY	Stable under ordinary conditions

EXTERNAL LINKS & GENERAL DESCRIPTION

Piperazine is a six-sided organic ring compound containing two opposing nitrogen atoms (see image). The piperazines are a broad class of chemical compounds, all of which contain a piperazine functional group. Piperazines were originally named because of their chemical similarity with piperidine, a constituent of piperine in the black pepper plant (*Piper nigrum*). This has led to the erroneous belief that piperazines are naturally derived from black pepper. In reality, no piperazines occur naturally; they are usually artificially synthesized by reacting alcoholic ammonia with 1,2-dichloroethane. Many piperazines are successful drugs. Notable piperazine drugs include:

- BZP (recreational drug)
- Dramamine (motion sickness drug)
- Viagra (impotence drug)

A large number of piperazine compounds have anthelmintic (anti-parasitic) action. Their mode of action is generally by paralysing parasites, which allows the host body to easily remove or expel the invading organism. Piperazine hydrate and piperazine citrate are the main anthelminthic piperazines. These drugs are often referred to simply as "piperazine" which may cause confusion between the specific anthelmintic drugs and the entire class of piperazine-containing compounds. Piperazines are also used in the manufacture of plastics, resins, pesticides, and other industrial materials.

Local:

Piperazine is a heterocyclic compound containing four carbon atoms and two of nitrogen at 1,4 position (also called 1,4-hexahydropyrazine). It is a deliquescent crystalline compound melting at 105 °C; soluble in water, alcohol, glycerol, and glycols. It is used as a main ingredient of anthelmintics used to treat intestinal roundworms (ascariasis) infection in human and poultry and to treat pinworms (enterobiasis; oxyuriasis) by altering cell membrane permeability and causing hyperpolarization of the membrane. Piperazine is a main moiety in psychoactive drugs. Certain piperazine derivatives are suspected of ecstasy substitutes. Benzylpiperazine is banned in many countries. Benzylpiperazine has been used as an anthelmintic (antiparasitic effect). Nitrogen in piperazine ring plays an important role in biological research and drug manufacturing industry including the preparation of anthelmintic, antiallergenic, antibacterial, antihistamic, antiemetic and antimigraine agents. The piperazine ring and piperazine derivatives are important cyclic components in industrial field as raw materials for hardener of epoxy resins, corrosion inhibitors, insecticides, accelerators for rubber, urethane catalysts and antioxidants.

SALES SPECIFICATION

APPEARANCE	White flake
PURITY	99.5% min
WATER	0.5% max
INDIVIDUAL IMPURITY	0.5% max

TRANSPORTATION

PACKING	25kgs in bag
HAZARD CLASS	8 (Packing Group: III)
UN NO.	2579

SAFETY INFORMATION

GHS SIGNAL WORD PICTOGRAMS	Warning 
HAZARD STATEMENTS	H314: Causes severe skin burns and eye damage H317: May cause an allergic skin reaction H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child H228: Flammable solid
PRECAUTIONARY STATEMENTS	P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P261: Avoid breathing dust/fume/gas/mist/vapors/spray P304 + P341: IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing

EC DIRECTIVES HAZARD CODES	P342 + P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician P280: Wear eye protection/face protection P273: Avoid release to the environment
	 F Highly flammable  C Corrosive  XN Harmful
RISK PHRASES	11: Highly flammable. 34: Causes burns. 42/43: May cause sensitisation by inhalation and skin contact. 62: Possible risk of impaired fertility. 63: Possible risk of harm to the unborn child.
SAFETY PHRASES	22: Do not breathe dust. 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. 36/37/39: Wear suitable protective clothing, gloves and eye/face protection. 45: In case of accident or if you feel unwell, seek medical advice immediately (show label where possible) 61: Avoid release to the environment. Refer to special instructions safety data sheet.