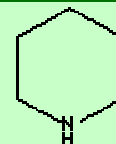


# PIPERIDINE

## PRODUCT IDENTIFICATION

CAS NO.	110-89-4
EINECS NO.	203-813-0
FORMULA	$\text{CH}_2(\text{CH}_2)_4\text{NH}$
MOL WT.	85.15
H.S. CODE	2933.39
TOXICITY	Oral rat LD50: 400 mg/kg
SYNONYMS	Hexahydropyridine; Pentamethyleneimine; Azacyclohexane; cyclopentimine; cypentil; hexazane; Piperidin (German);
RAW MATERIALS	
CLASSIFICATION	



## PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	clear or slight yellow with pepper like odor
MELTING POINT	-13 C
BOILING POINT	106 C
SPECIFIC GRAVITY	0.862
SOLUBILITY IN WATER	Miscible
AUTOIGNITION	
pH	12.6
VAPOR DENSITY	3
NFPA RATINGS	Health: 2 ; Flammability: 3 ; Reactivity: 3
REFRACTIVE INDEX	1.4534
FLASH POINT	15 C
STABILITY	Stable under ordinary conditions

## GENERAL DESCRIPTION & APPLICATIONS

Piperidine, hexahydropyridine, is a family of heterocyclic organic compound derived from pyridine through hydrogenation. It has one nitrogen atom in the cycle. It is a clear liquid with pepper-like aroma. It boils at 106 C, soluble in water, alcohol, and ether. The major application of piperidine is for the production of dipiperidinyldithium tetrasulfide used as a rubber vulcanization accelerator. In pharmaceutical synthesis industry, it is a skeleton in some drugs such as methylphenidate (central nervous system stimulant), budipine (antiparkinsonian drug) raloxifene (selective estrogen receptor modulator), minoxidil (an oral drug to treat high blood pressure). It is used as a special solvent in solid phase synthesis and a protecting group for peptide synthesis. Piperidine derivative compounds are used as intermediate to make crystal derivative of aromatic nitrogen compounds containing nuclear halogen atoms. Ring system compounds with nitrogen which have basic property playing important roles as cyclic component in industrial field such as raw materials for hardener of epoxy resins, corrosion inhibitors, insecticides, accelerators for rubber, urethane catalysts, antioxidants and as a catalyst for silicone esters. They are used in manufacturing pharmaceuticals. Piperidine is listed as a Table II precursor under the United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances.

## SALES SPECIFICATION

APPEARANCE	clear to light yellow liquid
PURITY (G.C)	99.5% min
COLOR, APHA	10 max
SPECIFIC GRAVITY	0.857 - 0.867
MOISTURE (K.F)	0.1% max

**TRANSPORTATION****PACKING**

170kgs in drum

**HAZARD CLASS**

3 (Packing group : II)

**UN NO.**

2401

**DESCRIPTION OF PYRIDINE**

PYRIDINE, also called azabenzene and azine, is a heterocyclic aromatic tertiary amine characterized by a six-membered ring structure composed of five carbon atoms and a nitrogen which replace one carbon-hydrogen unit in the benzene ring ( $C_5H_5N$ ). The simplest member of the pyridine family is pyridine itself. It is colorless, flammable, toxic liquid with a unpleasant odor, miscible with water and with most organic solvents, boils at 115 C. Its aqueous solution is slightly alkaline. Its conjugate acid is called pyridinium cation,  $C_5H_5NH^+$ , used as a oxidation agent for organic synthesis.. Pyridine is a base with chemical properties similar to tertiary amines. Nitrogen in the ring system has an equatorial lone pair of electrons, that does not participate in the aromatic pi-bond. Its aqueous solution is slightly alkaline. It is incompatible and reactive with strong oxidizers and strong acids, and reacts violently with chlorosulfonic acid, maleic anhydride, oleum, perchromates, b-propiolactone, formamide, chromium trioxide, and sulfuric acid. Liquid pyridine easily evaporates into the air. If it is released to the air, it may take several months to years until it breaks down into other compounds. Usually, pyridine is derived from coal tar or synthesized from other chemicals, mainly acetaldehyde and ammonia. Pyridine compounds are found in nature. For example, nicotine from tobacco, ricinine from castor bean, pyridoxine or vitamin B and P products, alkaloids (such as coniine, piperine and nicotine), and etc. Some pyridine compounds consumed largely are;

Picoline : Three structural isomers of methyl pyridines (alpha, beta, gamma- positions)

Lutidine : Six structural isomers of dimethyl pyridines (2,3-, ,24-, 2,5-, 2,6-, 3,4-, 3,5- positions)

Collidine : Three structural isomers of trimethyl pyridines (2,3,5-, 2,3,6-, 2,4,6- positions)

Pyrimidine: Pyridine alteration containing nitrogen atoms at positions 1 and 3

Piperidine: Hexahydropyridine (saturated form)

Nicotinic acid: pyridine-3-carboxylic acid

Pyridine and its derivatives are very important in industrial field as well as in bio chemistry.

Nucleotide consist of either a nitrogenous heterocyclic base (purine or pyrimidine). Three major pyrimidines in living systems are cytosine, thymine, and uracil. Pyrimidine and its derivatives are biologically important components of nucleic acids (DNA, RNA) and coenzymes. Some pyridine system is active in the metabolism in the body. Certain nitrogenous plant products also have pyridine class compounds. They can be the parent compound of many drugs, including the barbiturates. Pyridine and its derivatives are used as solvents and starting material for the synthesis of target compounds such as insecticides, herbicides, medicines, vitamins, food flavorings, feed additives, dyes, rubber chemicals, explosives, disinfectants, and adhesives. Pyridine is also used as a denaturant for antifreeze mixtures, as a dyeing assistant in textiles and in fungicides.

**PRICE****Open**