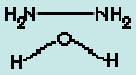
HYDRAZINE HYDRATE



PRODUCT IDENTIFICATION	
CAS NO.	302-01-2 (Base), 7803-57-8 (Hydrate)
EINECS NO.	206-114-9
FORMULA	$H_2NNH_2.H_2O$
MOL WT.	50.06
H.S. CODE	2825.10
TOXICITY	Oral rat LD50: 129 mg/kg
SYNONYMS	Hydrazine, monohydrate; Hidrazina (Spanish); Hydrazine hydroxide; Hydrazinium hydroxide; Idrazina idrata (Italian);
DERIVATION	ammonia with chloramine or sodium hypochlorite with urea
CLASSIFICATION	

PHYSICAL AND CHEMICAL PROPERTIES (N_2H_4 64%)	
PHYSICAL STATE	clear liquid
MELTING POINT	-51 C
BOILING POINT	118 C
SPECIFIC GRAVITY	1.032
SOLUBILITY IN WATER	Miscible
pH	Strong Base
VAPOR DENSITY	1.73
AUTOIGNITION	280 C
NFPA RATINGS	Health: 3; Flammability: 3; Reactivity: 3
REFRACTIVE INDEX	1.4280
FLASH POINT	74 C
STABILITY	Stable under ordinary conditions

GENERAL DESCRIPTION & APPLICATIONS

Hydrazine (anhydrous), H_2NNH_2, is a clear, fuming, corrosive liquid with an ammonia-like odor; melting at 1.4 C, boiling at 113.5 C, specific gravity 1.011. It is very soluble in water and soluble in alcohol. It decomposes on heating or exposure to UV to form ammonia, hydrogen, and nitrogen, which may be explosive with a blue flame when catalysed by metal oxides and some metals such as platinum or Raney nickel. It is prepared from ammonia with chloramine in the presence of glue or gelatin (to inhibit decomposition of the hydrazine by unreacted oxidants) as the hydrate form usually (100% monohydrate contains 64% by weight hydrazine). Hydrazine is also prepared from sodium hypochlorite with urea in the presence of glue or gelatin. Botht ammonia and amines are nitrogen nucleophiles which donate electrons (they are Lewis bases). But hydrazine (diamine) has much stronger nucleophilicity which makes it more reactive than ammonia. Hydrazine has dibasic and very reactive properties. Hydrazine is used as a component in jet fuels because it produce a large amount of heat when burned. It is less flammable and less volatile than hydrocarbon fuels. It is relatively environmentally friendly because they degrade quickly in the environment. Hydrazine is used as an oxygen scavenger for water boiler feed and heating systems to prevent corrosion damage. Hydrazine is used as a reducing agent for the recovery of precious metals. It is used as a polymerization catalyst and a chain extender in urethane coatings. It, or a derivative thereof, is versatile intermediate. They have active applications in organic synthesis for agrochemicals, pharmaceuticals, photographic, heat stabilizers, polymerization catalysts, flame-retardants, blowing agents for plastics, explosives, and dyes. Recently, hydrazine is applied to LCD (liquid crystal displays) as the fuel to make faster thin-film transistors. Hydrazone is a compound containing the group -NH·N:C-. It is formed from a condensation reaction aldehydes or ketones with hydrazines (commonly phenylhydrazine). It is used as an exotic fuel. Aromatic hydrazones are used to form indole by a ring closure reaction (Fischer synthesis). Hydrazones and hydrazines are converted to

aldehydes and ketones to corresponding hydrocarbons by heating the carbonyl compound with sodium ethoxide (Wolf-Kishner reduction). Azide contains the group -N_3represented as a resonance hybrid of two structures, -N-N^-¡ÕN^+ ¡ê -N=N^+=N^-. Organic azides are compounds replaced by a hydrocarbon group as in alkyl or aryl from hydrazoic acid (HN_3)and have general formula RN_3. Acyl azide is a compound in which the hydroxy group of a carboxylic acid is replaced by the azido group (HN_3). Hydrazide is an acyl hydrazine. Acyl (-CO) is an organic radical formed by removal of a hydroxyl group from an organic acid (carboxyl group). Organic azides are useful for the synthesis of target compounds. They act as electrophiles on the nitrogen attached to the carbon and have electron-donating character for the neighboring carbon.

SALES SPECIFICATION	
APPEARANCE	clear liquid
HYDRATE (HYDRAZINE)	55% 75% 85% 100% (35.2% 48.0% 54.4% 64%)
CHLORIDE	0.001% max
SULFATE	0.0005% max
IRON	5ppm max
NON VOLATILES	0.01% max
HEAVY METALS	5ppm max

TRANSPORTATION	
PACKING	200kgs in drum
HAZARD CLASS	8 (Packing group:II)
UN NO.	2029, 2030

GENERAL DESCRIPTION

Hazard Symbols: T C, Risk Phrases: 10-23/24/25-34-40-43-45, Safety Phrases: 53-36/37/39-45

HYDRAZINE DERIVATIVES

Pyrazole, Pyridazine, Thiadiazole, Triazine, Triazole as agrocemicals; Aminoguanidines, Benzoic hydrazides, Hydrazines, Hydrazones, Hydroxyethylhydrazines, Pyrazoles, Pyridazines, Semicarbazides,Thiadiazoles, Thiosemicarbazides, Triazines, Triazoles, Triazolones for agriculture and drug industry; Azodicarboanmide, benzenesulfonylhydrazide, Toluenesulfonylhydrazide, Oxybisbenzenesulfonylhydrazide, 5-phenyltetrazole as chemical blowing agents 2.2'-Azobisisobutyronitrile, 2,2'-Azobis(2,4-dimethylvaleronitrile), 2,2'-Azobis(2-methylbutyronitrile) as polymerization catalysts; Isophthalic dihydrazide, Adipic dihydrazide, Sebacic dihydrazide, Dodecanedioic acid dihydrazide, 1,6-Hexamethylene bis(N,N-dimethylsemicarbazide), 1,1,1',1'-Tetramethyl-4,4'-(methylene-di- p-phenylene)disemicarbazide, Spiroglycol as stabilizers.