

# ADIPIC ACID

## PRODUCT IDENTIFICATION

CAS NO.	124-04-9
EINECS NO.	204-673-3
FORMULA	HOOC(CH <sub>2</sub> ) <sub>4</sub> COOH
MOL WT.	146.142
H.S. CODE	2917.12
TOXICITY	Oral rat LD <sub>50</sub> : >11 gm/kg

SYNOMYS 1,4-Butanedicarboxylic acid; 1,6-Hexanedioic Acid; Adipinic Acid; Acifloctin; Acinetten; Hexanedioic acid;

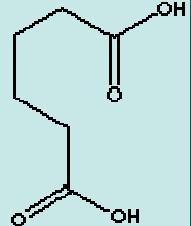
## DERIVATION CLASSIFICATION

## PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	white crystals
MELTING POINT	152 - 154 C
BOILING POINT	337 C
SPECIFIC GRAVITY	1.36
SOLUBILITY IN WATER	Slightly soluble
pH	3.45 (1%)
VAPOR DENSITY	5
AUTOIGNITION	420 C
REFRACTIVE INDEX	
NFPA RATINGS	Health: 1; Flammability: 1; Reactivity: 0
FLASH POINT	210 C
STABILITY	Stable under ordinary conditions

## GENERAL DESCRIPTION & APPLICATIONS

Adipic Acid (also called hexanedioic acid) is a white, crystalline compound of C<sub>6</sub> straight-chain dicarboxylic acid; slightly soluble in water and soluble in alcohol and acetone. Almost all of the commercial adipic acid is produced from cyclohexane through two sequent oxidation processes. The first oxidation is the reacting of cyclohexane with oxygen in the presents of cobalt or manganese catalysts at a temperature of 150 - 160 C, which produce cyclohexanol and cyclohexanone. Then, the intermediates are further reacted with nitric acid and air with a catalyst (copper or vanadium) or without nitric acid. Cyclohexane can be prepared by the hydrogenation of benzene. There are other ways such as the reactions using phenol, butadiene, and various fats as the starting material. Adipic acid consumption is linked almost 90% to nylon production by the polycondensation with hexamethylenediamine. Nylon, having a protein-like structure, is further processed into fibers for applications in carpeting, automobile tire cord and clothing. Adipic acid is used in manufacturing plasticizers and lubricants components. It is used in making polyester polyols for polyurethane systems. Food grade adipic acid is used as gelling aid, acidulant, leavening and buffering agent. Adipic acid has two carboxylic acid, -COOH, groups, which can yield two kinds of salts. Its derivatives, acyl halides, anhydrides, esters, amides and nitriles, are used in making target products such as flavoring agents, internal plasticizers, pesticides, dyes, textile treatment agents, fungicides, and pharmaceuticals through further reactions of substitution, catalytic reduction, metal hydride reduction, diborane reduction, keto formation with organometallic reagents, electrophile bonding at oxygen, and condensation.



SALES SPECIFICATION	
APPEARANCE	white crystalline powder
CONTENT	99.5% min
COLOR. APHA	5 max
IRON	0.2 ppm max
ASH	7 ppm max
NITRATE	5 ppm max
WATER	0.2% max
TRANSPORTATION	
PACKING	25kgs in bag
HAZARD CLASS	
UN NO.	
OTHER INFORMATION	
Hazard Symbols: XI, Risk Phrases: 36, Safety Phrases:	