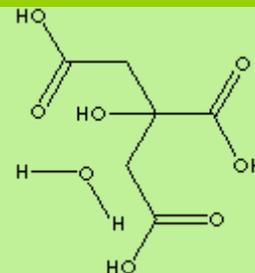


CITRIC ACID, MONOHYDRATE

PRODUCT IDENTIFICATION

CAS NO.	5949-29-1
EINECS NO.	
FORMULA	$\text{HOC}(\text{COOH})(\text{CH}_2\text{COOH})_2 \cdot \text{H}_2\text{O}$
MOL WT.	210.14
H.S. CODE	2918.14
TOXICITY	Oral rat LD50: 3000 mg/kg



SYNONYMS 2-Hydroxy-1,2,3,propane-tricarboxylic acid, monohydrate; Hydrous citric acid; 2-Hydroxytricarballic acid monohydrate;

DERIVATION

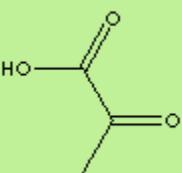
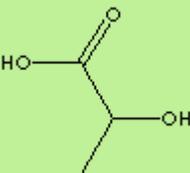
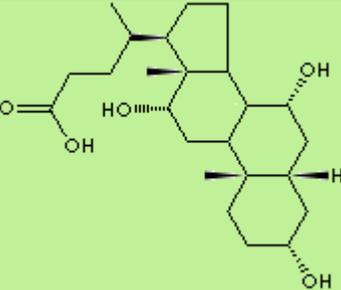
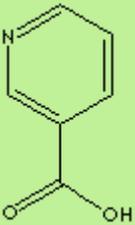
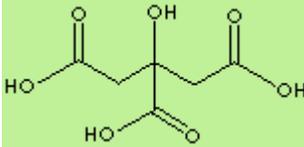
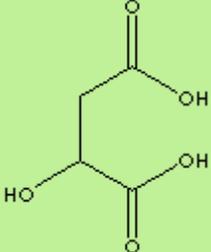
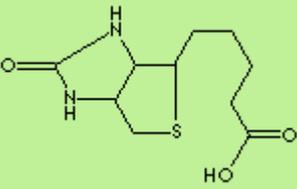
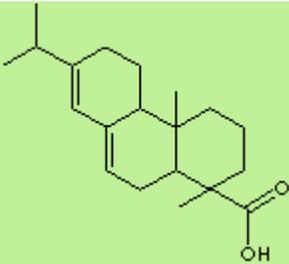
CLASSIFICATION

GENERAL DESCRIPTION

Citric Acid (2-Hydroxy-1,2,3-propanetricarboxylic acid, in IUPAC naming) is a colourless crystalline organic compound belong to carboxylic acid family. It exists in all plants (especially in lemons and limes) and in many animal tissues and fluids. In biochemistry, it is involved in important metabolism of almost all living things; the Krebs cycle (also called citric acid cycle or tricarboxylic acid cycle), a part of the process by which animals convert food to energy. Citric acid works as a preservative (or as an antioxidant) and cleaning agent in nature. It is commercially obtained by fermentation process of glucose with the aid of the mold *Aspergillus niger* and can be obtained synthetically from acetone or glycerol. It can be used as an sour taste enhancer in foods and soft drinks. The three carboxy groups lose protons in solution; resulting in the excellent pH control as a buffer in acidic solutions. It is used as a flavouring, stabilizing agent and acidulant (to control acidity) in food industry, in metal-cleaning compositions as it chelates metals. Citric acid is available in forms of anhydrous primarily and in monohydrate, the crystallized form from water. The hydrated form will be converted to the anhydrous form above 74 C. Citrate is a salt or ester of citric acid. Citrates are formed by replacing the acidic one, two, or all three of the carboxylic hydrogens in citric acid by metals or organic radicals to produce an extensive series of salts, esters, and mixed (double) salts. Citrates are used in food, cosmetics, pharmaceutical and medicine industries as well as in plastic industry; nutrient or food additives having functions of acidity regulator, sequestering and stabilizing agent, antioxidants synergist, firming agent; anticoagulant for stored whole blood and red cells and also for blood specimens as citrates chelate metal ions and saline cathartics, effervescent medicines; high boiling solvent, plasticizer and resin for food contact plastics.

EXAMPLES OF NATURALLY OCCURRING CARBOXYLIC ACIDS (excluding fatty acids)

Pyruvic acid	Lactic Acid	Cholic acid	Nicotinic acid
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metabolic intermediate	metabolic intermediate	from bile	vitamin B
Citric acid	Malic Acid	Biotin	Abietic acid
			
in plants	in fruits	cell growth factor	pine rosin

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	White crystalline powder
MELTING POINT	100 C
BOILING POINT	175 C (Decomposes)
SPECIFIC GRAVITY	1.542
SOLUBILITY IN WATER	Freely Soluble
pH	2.2 (0.1 N sol).
VAPOR DENSITY	
AUTOIGNITION	1010 C
NFPA RATINGS	Health: 1 Flammability: 1 Reactivity: 0
REFRACTIVE INDEX	
FLASH POINT	100 C
STABILITY	Stable under ordinary conditions

APPLICATIONS

Food, Beverages, Flavour enhancer, Colouring, Preservative, Detergents, Cleaners, Pharmaceuticals, Cosmetics, Industrial and Chemical processing

SALES SPECIFICATION

BIBLIOGRAPHY	FCC/USP/BP
APPEARANCE	White crystalline powder
ASSAY	99.5% - 101.0%
WATER	7.5% - 9.0%
CLARITY OF SOLUTION	4 NTU
SULPHATE	150ppm max
CHLORIDE	50ppm max
IRON	5ppm max
READILY CARBONIZABLES	Pass test
OXALATE	350ppm max
CALCIUM	200ppm max

ARSENIC	3ppm max
HEAVY METALS (as Pb)	10ppm max
TRANSPORTATION	
PACKING	25kgs in bag
HAZARD CLASS	Not regulated
UN NO.	
OTHER INFORMATION	
Hazard Symbols: XI, Risk Phrases: 37/38-41, Safety Phrases: 26-36/37/39	