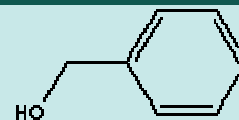


BENZYL ALCOHOL

PRODUCT IDENTIFICATION

CAS NO.	100-51-6
EINECS NO.	202-859-9
FORMULA	$C_6H_5CH_2OH$
MOL WT.	108.14
H.S. CODE	2906.29
TOXICITY	Oral rat LD50: 1230mg/kg
SYNONYMS	Benzenemethanol; Phenylcarbinol; Phenylmethyl alcohol; Phenylmethanol; alpha-Hydroxytoluene; Benzoyl alcohol; Hydroxytoluene; Benzenecarbinol; alpha-toluenol; (hydroxymethyl)benzene;



DERIVATION

CLASSIFICATION

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	clear, colorless liquid
MELTING POINT	-15 C
BOILING POINT	203 - 205 C
SPECIFIC GRAVITY	1.046
SOLUBILITY IN WATER	4 gr/100ml
pH	
VAPOR DENSITY	3.72
AUTOIGNITION	436 C
NFPA RATINGS	Health: 2 Flammability: 2 Reactivity: 0
REFRACTIVE INDEX	1.540
FLASH POINT	104 C
STABILITY	Stable under ordinary conditions

GENERAL DESCRIPTION & APPLICATIONS

Benzyl is the prefix describing the presence of the radical " $C_6H_5CH_2-$ ". A simple example is benzyl alcohol, $C_6H_5CH_2OH$. Benzyl alcohol, also called phenylmethanol or phenylcarbinol, is a clear, colorless liquid with a mild pleasant aromatic odor; melting at 15 C and Boiling at 205 C. It is a primary alcohol with arene group. It is partially soluble in water and readily soluble in alcohol and ether. Benzyl alcohol is prepared by the hydrolysis of benzyl chloride in the presence of soda ash. Benzyl alcohol has properties of strong polarity and limited water solubility. It features also good solvency, low toxicity and low vapor pressure. It is used as a general solvent for inks, paints, lacquers, epoxy resin coatings, and as a degreasing agent in cleaning as well as for chemical reaction process. It reacts with acids (acetic, benzoic, and sebacic acids, and etc) to form numerous esters, salts and other compounds, thus is used widely as a valued intermediate in industrial field as well as in making soap, perfume, and flavors. This compound is used as a dyeing assistant for filament nylons. Its applications include many pharmaceutical preparations and bacteriostatic compounds. It was used for antipruritic activity to relieve itching. Carbinol is a primary alcohol with general formula RCH_2OH . In carbinol nomenclature system, the term of carbinol is methanol itself and other groups are considered to have replaced one of the methanol hydrogen atoms to describe larger alcohols as derivatives of carbinol. This nomenclature system is particularly useful when the groups attached to the methanol carbon are large, aromatic, and cyclo groups. Benzyl alcohol is called phenylcarbinol or benzenecarbinol while benzyl carbinol is phenylethyl alcohol.

Alcohols are widely used as solvents, fuels and chemical raw materials. Generally, hydroxyl group compounds are polar, which trends to promote solubility in water. But the carbon chain resist to solubility in water. Short chain alcohols (methanol, ethanol, and propanol) in which the hydroxyl group predominates are miscible in water. Butanol is moderately soluble because of the balance between the two opposing solubility trends. Higher alcohols are practically insoluble in water because of the hydrocarbon chain's trend is stronger. Alcohols are "protic" solvents. Protic refers to a hydrogen atom attached to an electronegative atom, oxygen. Polar protic solvents are compounds that can be represented by the general formula ROH of which water (H_2O), methanol

(CH₃OH) and acetic acid (CH₃COOH) are examples. Water-soluble alcohols, low-molecular weight products, are solvents for the manufacture of coatings, dyes and inks, plastics, flavorings, personal-care products, pharmaceuticals, and cleaners. The higher alcohols, slightly soluble in water or insoluble, can provide the proper balance of target properties when solvent-based solvents are formulated for desired viscosity, flowing and leveling, and curing rate and can be used as coupling agents in waterborne coatings.

Alcohols are very weak acids as they lose H⁺ in the hydroxyl group. Alcohols undergoes dehydration reaction which means the elimination of water molecule replaced by a pi bond between two adjacent carbon atoms to form alkenes under heating in the presence of strong acids like hydrochloric acid or phosphoric acid. Primary and secondary alcohols can be oxidized to aldehydes and ketones respectively. Carboxylic acids are obtained from oxidation of aldehydes. Oxidation in organic chemistry can be considered to be the loss of hydrogen or gain of oxygen and reduction to gain hydrogen or loss of oxygen. Tertiary alcohols do not react to give oxidation products as they have no H attached to the alcohol carbon. Alcohols undergoes important reactions called nucleophilic substitution in which an electron donor replaces a leaving group, generally conjugate bases of strong acids, as a covalent substitute of some atom. One of important reaction of alcohol is condensation. Ethers are formed by the condensation of two alcohols by heating with sulfuric acid; the reaction is one of dehydration. Almost infinite esters are formed through condensation reaction called esterification between carboxylic acid and alcohol, which produces water. Alcohols are important solvents and chemical raw materials. Alcohols are intermediates for the production of target compounds, such as pharmaceuticals, veterinary medicines, plasticizers, surfactants, lubricants, ore floatation agents, pesticides, hydraulic fluids, and detergents.

Benzyl alcohol, an aromatic primary alcohol, is a clear, oily liquid with a mild, pleasant odor; melting point at -15 C; boiling point at 205 C; specific gravity 1.04. It is soluble in water and readily soluble in alcohol and ether. The benzene ring can be a ring-substituted with alkyl groups. Benzyl alcohol readily forms esters with various acids and thus provides wide finish product applications including soap, perfume, flavor & fragrance, and food additive. Benzyl alcohol shows strong polarity and limited water solubility and is a useful solvent. Solvent application is useful in ink, lacquer, coating, degreasing agent, dyeing polyamide, and as a bonding aid. Pharmaceutical grade is also used as a bacteriostatic and as a local anesthetic.

Benzyl alcohol, or a derivative thereof, is used as a:

- solvent in paint stripper and waterborne coatings applications
- curing agent epoxy coating industry
- chemical intermediate for synthesis of target molecules used in pharmaceuticals, cosmetics, preservatives, and flavoring & fragrance agents.

SALES SPECIFICATION

TECHNICAL GRADE

APPEARANCE	Clear liquid
PURITY	99.5% min
BENZALDEHYDE	0.2% max
SPECIFIC GRAVITY	1.043 - 1.049
REFRACTIVE INDEX	1.5385 - 1.5405
WATER	0.1% max

TRANSPORTATION

PACKING	200kgs in Drum
HAZARD CLASS	6.1
UN NO.	2810

OTHER INFORMATION

Hazard Symbols: XN, Risk Phrases: 20/22, Safety Phrases: 26