

INTRODUCTION AND USES OF ISOAMYL ALCOHOL

1. INTRODUCTION:

Isoamyl alcohol is an organic compound having molecular formula $C_5H_{12}O$. Isoamyl alcohol is one of the eight isomers of Amyl alcohol. It is a primary alcohol. It is a clear water white liquid of moderate volatility. It is narcotic and is about four times as toxic as ethanol. It has the highest narcotic effect among all the Amyl alcohols. It was first derived from Fusel oil, a byproduct during the production of Ethyl alcohol by fermentation of molasses. It was then derived from the chlorination of Pentanes followed by hydrolysis. Later on, it was manufactured by Oxo Process. Oxo Process is a general process for the manufacture of C_4 and higher alcohols. Following are the synonyms of Isoamyl alcohol:

3-methyl-1-butanol,

2-methyl-4-butanol,

iso butyl carbinol,

sec-butyl carbinol,

1-hydroxy-3-methyl butane,

prim-isoamyl alcohol.

Formula: $(CH_3)_2CHCH_2CH_2OH$

2. USES AND MARKET OF ISOAMYL ALCOHOL:

Uses of isoamyl alcohol are dictated either by its solvent properties or by those structure/chemical reactivity relationship useful for chemical intermediate manufacture. On solvency, the amyl alcohols fall in between the hydrocarbon solvents and the water miscible lower alcohols and ketones.

Isoamyl alcohol is good solvent and diluent for printing inks, lacquers, gum, inhibitors and hydraulic fluids. Paraffin wax dissolves in the hot isoamyl alcohol. Various polar plastics and high molecular weight esters also employ isoamyl alcohol

based solvent systems. For example, cellulose esters, shellac, Kauri gum, copal esters, urea formaldehyde, and paraffin. Isoamyl alcohol is used as hydraulic and lube oil additives, as frothing agents in mineral dressing applications and recently, they are used in tertiary crude oil recovery processes.

As chemical intermediate, isoamyl alcohol mainly serves as precursors for esterification of higher boiling solvent esters or plasticizers. The earliest major use of isoamyl alcohol was the production of amyl acetate (banana oil) for the lacquer industry. However, with the decline of nitrocellulose lacquers and the advent of other solvents, the use of isoamyl alcohol has largely declined. Isoamyl alcohol is specifically favored for flavoring and perfume use.

It is used in the organic synthesis of esters, pharmaceutical products, and photographic chemicals, as solvents for the preparation of synthetic apricot, banana, cherry, greengage, malt, orange, plum, and whisky flavors.