

CHAPTER-2

PROPERTIES AND USES

Physical Properties:

- 1) 2-Ethyl hexanol is a clear liquid with a characteristic odor.
- 2) It forms a transparent mixture with other alcohols, ethers and most organic liquids.

Chemical Properties:

2-Ethyl hexanol reacts in the typical manner of α -branched primary alcohols.

Summary of Physical Properties:

Property	Value
Molecular weight	130.22
2-Ethylhexanol	≥ 99.5 wt %
Color, Pt-Co scale	Max. 5
Distillation range (95 vol%) at 101.3 kPa	184-185°C
Viscosity at 20°C	9.8 mPa.s
Vapor pressure at 20°C	ca.0.03 kPa
Heat of vaporization at 184.8°C	50.66 kJ/mol
Solubility in water at 20°C	0.07 wt%
Solubility of water in 2-ethylhexanol at 20°C	2.7 wt%
Surface tension at 20°C	0.25×10^{-3} N/.cm
Dielectric constant at 20°C	7.7
bp at 101.3 kPa	184.6°C
Critical temperature	339.8°C
Critical pressure	2.76 MPa
Critical density	0.2636 g/cm ³
Critical compressibility	0.2670
Specific flow resistance at 20°C	5.8×10^3 M Ω .cm
Azeotrope with water at 101.3 kPa, 20% 2-ethylhexanol/ 80% water, bp	183.5°C

	2-Ethylhexanol	
	Physical Data	Specifications
Content (wt.%)	-	>99
Boiling range(°C) (760 Torr = 1013 mbar, min 95 vol.%)	184.8	183.5-185
Density at 20°C(g/cm ³)	0.8323	0.832-0.835
Refraction index n_D^{20}	1.4317	1.431-1.433
Hazen color (APHA)	-	<10
Water content (wt.%)	-	<0.1
Acid number (mg KOH/g)		<0.1
Carbonyl number (mg KOH/g)		<0.2
Pour point (°C)	-	-72
Viscosity at 20°C (mPa·s)	~10	
(cP)	9.8	9.5-11
Vapor pressure at 20°C (mbar)	<0.5	
Evaporation number	600-690	
Evaporation (wt.%)	18	
Solubility in water at 20°C(wt.%)	0.07	
Water absorption (wt.%)	2.7	
Surface tension at 20°C (mN/m) (dyn/cm)	25	
Dielectric constant at 20°C	7.7	
Flash point (°C)	74-80	
Ignition temperature (°C)	250	

Property	t, °C	Value
Vapor pressure, kPa	78.7	1.333
	90.8	2.666
	104.6	5.332
	113.5	7.998
	125.5	13.33
	143.5	26.66
	164.2	53.32
	184.8	101.31
Relative density, d_4^t	10	0.8396
	15	0.8359
	20	0.8323
	25	0.8286
	30	0.8247
	50	0.8100
	Refractive index, n_D^t	10
15		1.4337
20		1.4317
25		1.4298
30		1.4278
50		1.4199
Specific heat, $c_p, \text{J g}^{-1}\text{K}^{-1}$	0	2.22
	20	2.34
	50	2.51
	80	2.68

Iso-Butryaldehyde n-Butryaldehyde Properties:

Propylene ,Hydrogen,Carbon Monoxide Specific Heats:

