

## HPLC Solvent Properties

### SOLVENT POLARITY CHART

Relative Polarity	Compound Formula	Group	Representative Solvent Compounds
Nonpolar	R - H	Alkanes	Petroleum ethers, ligroin, hexanes
	Ar - H	Aromatics	Toluene, benzene
	R - O - R	Ethers	Diethyl ether
	K - X	Alkyl halides	1,1,1-trichloroethane, chloroform
	R - COOR	Esters	Ethylacetate
	R - CO - R	Aldehydes and ketones	Acetone, methyl ethyl ketone
	R - NH	Amines	Pyridine, triethylamine
	R - OH <sup>2</sup>	Alcohols	Methanol, ethanol, isopropanol, butanol
	R - COHN	Amides	Dimethylformamide
	R - COOH <sup>2</sup>	Carboxylic acids	Ethanoic acid
Polar	H - OH	Water	Water

SOLVENT	POLARITY INDEX	REFRACTIVE INDEX @ 20°C	UV (nm) CUTOFF @ 1 AU	BOILING POINT (°C)	VISCOSITY (cPoise)	SOLUBILITY IN WATER (% w/w)
Acetic Acid	6.2	1.372	230	118	1.26	100
Acetone	5.1	1.359	330	56	0.32	100
Acetonitrile	5.8	1.344	190	82	0.37	100
Benzene	2.7	1.501	280	80	0.65	0.18
Butyl Acetate	4.0	1.394	254	125	0.73	0.43
n-Butanol	3.9	1.399	215	118	2.98	7.81
Carbon tetrachloride	1.6	1.466	263	77	0.97	0.08
Chloroform	4.1	1.446	245	61	0.57	0.815
Cyclohexane	0.2	1.426	200	81	1.00	0.01
1,2-Dichloroethane <sup>1</sup>	3.5	1.444	225	84	0.79	0.81
Dichloromethane <sup>2</sup>	3.1	1.424	235	41	0.44	1.6
Dimethylformamide	6.4	1.431	268	155	0.92	100
Dimethyl Sulfoxide <sup>3</sup>	7.2	1.478	268	189	2.00	100
Dioxane	4.8	1.422	215	101	1.54	100
Ethyl Acetate	4.4	1.372	260	77	0.45	8.7
Ethanol	5.2	1.360	210	78	1.20	100
Diethyl Ether	2.8	1.353	220	35	0.32	6.89
Heptane	0.0	1.387	200	98	0.39	0.0003
Hexane	0.0	1.375	200	69	0.33	0.001
Methanol	5.1	1.329	205	65	0.60	100
Methyl-t-Butyl Ether <sup>4</sup>	2.5	1.369	210	55	0.27	4.8
Methyl Ethyl Ketone <sup>5</sup>	4.7	1.379	329	80	0.45	24
Pentane	0.0	1.358	200	36	0.23	0.004
n-Propanol	4.0	1.384	210	97	2.27	100
iso-Propanol <sup>6</sup>	3.9	1.377	210	82	2.30	100
di-iso-Propyl Ether	2.2	1.368	220	68	0.37	
Tetrahydrofuran	4.0	1.407	215	65	0.55	100
Toluene	2.4	1.496	285	111	0.59	0.051
Trichloroethylene	1.0	1.477	273	87	0.57	0.11
Water	9.0	1.333	200	100	1.00	100
Xylene	2.5	1.500	290	139	0.61	0.018

Solvent 1	Solvent 2	Miscibility
Xylene	Water	Immiscible
Trichloroethylene	Water	Immiscible
Toluene	Water	Immiscible
Tetrahydrofuran	Water	Miscible
di-iso-Propyl Ether	Water	Miscible
iso-Propanol	Water	Miscible
n-Propanol	Water	Miscible
Pentane	Water	Immiscible
Methyl Ethyl Ketone <sup>5</sup>	Water	Miscible
Methyl-t-Butyl Ether <sup>4</sup>	Water	Miscible
Methanol	Water	Miscible
Hexane	Water	Immiscible
Heptane	Water	Immiscible
di-Ethyl Ether	Water	Immiscible
Ethanol	Water	Miscible
Ethyl Acetate	Water	Miscible
Dioxane	Water	Miscible
Dimethyl Sulfoxide <sup>3</sup>	Water	Miscible
Dimethylformamide	Water	Miscible
Dichloromethane	Water	Miscible
1,2-Dichloroethane <sup>1</sup>	Water	Miscible
Cyclohexane	Water	Immiscible
Chloroform	Water	Immiscible
Carbon tetrachloride	Water	Immiscible
n-Butanol	Water	Miscible
Butyl Acetate	Water	Miscible
Benzene	Water	Immiscible
Acetonitrile	Water	Miscible
Acetone	Water	Miscible
Acetic Acid	Water	Miscible

 Immiscible  
 Miscible

#### SYNONYM TABLE

- Ethylene Chloride
- Methylene Chloride
- Methyl Sulfoxide
- tert-Butyl Methyl Ether
- 2-Butanone
- 2-Propanone

Immiscible means that in some proportions two phases will be produced.

### SOLVENT MISCIBILITY TABLE