

# 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
	R - X	Alkyl halides	Tetrachloromethane, 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

Increasing Polarity

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

Xylene	Water	Trichloroethylene	Toluene	Tetrahydrofuran	di-iso-Propyl Ether	iso-Propanol <sup>6</sup>	n-Propanol	Pentane	Methyl Ethyl Ketone <sup>5</sup>	Methyl-t-Butyl Ether <sup>4</sup>	Methanol	Hexane	Heptane	di-Ethyl Ether	Ethanol	Ethyl Acetate	Dioxane	Dimethyl Sulfoxide <sup>3</sup>	Dimethylformamide	Dichloromethane <sup>2</sup>	1,2-Dichloroethane <sup>1</sup>	Cyclohexane	Chloroform	Carbon tetrachloride	n-Butanol	Butyl Acetate	Benzene	Acetonitrile	Acetone	Acetic Acid
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 Immiscible  
 Miscible

### SYNONYM TABLE

1. Ethylene Chloride
2. Methylene Chloride
3. Methyl Sulfoxide
4. tert-Butyl Methyl Ether
5. 2-Butanone
6. 2-Propanol

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

## SOLVENT MISCIBILITY TABLE