Division of Organic Chemistry
American Chemical Society

Common Solvents Used in Organic Chemistry: Table of Properties [1,2,3]

Solvent	formula	MW	boiling point (°C)	melting point (°C)	density (g/mL)	solubility in water (g/100g)	Dielectric Constant [3,4]	flash point (°C)
acetic acid	$C_2H_4O_2$	60.052	118	16.6	1.0446	Miscible	6.20	39
acetone	C_3H_6O	58.079	56.05	-94.7	0.7845	Miscible	21.01	-20
acetonitrile	C_2H_3N	41.052	81.65	-43.8	0.7857	Miscible	36.64	6
benzene	C_6H_6	78.11	80.1	5.5	0.8765	0.18	2.28	-11
1-butanol	$C_4H_{10}O$	74.12	117.7	-88.6	0.8095	6.3	17.8	37
2-butanol	$C_4H_{10}O$	74.12	99.5	-88.5	0.8063	15	17.26	24
2-butanone	C_4H_8O	72.11	79.6	-86.6	0.7999	25.6	18.6	-9
t-butyl alcohol	$C_4H_{10}O$	74.12	82.4	25.7	0.7887	Miscible	12.5	11
carbon tetrachloride	CCl_4	153.82	76.8	-22.6	1.594	0.08	2.24	--
chlorobenzene	C_6H_5Cl	112.56	131.7	-45.3	1.1058	0.05	5.69	28
chloroform	$CHCl_3$	119.38	61.2	-63.4	1.4788	0.795	4.81	--
cyclohexane	C_6H_{12}	84.16	80.7	6.6	0.7739	0.0055	2.02	-20
1,2-dichloroethane	$C_2H_4Cl_2$	98.96	83.5	-35.7	1.245	0.861	10.42	13
diethylene glycol	$C_4H_{10}O_3$	106.12	246	-10	1.1197	10	31.8	124
diethyl ether	$C_4H_{10}O$	74.12	34.5	-116.2	0.713	7.5	4.267	-45
diglyme (diethylene glycol dimethyl ether)	$C_6H_{14}O_3$	134.17	162	-68	0.943	Miscible	7.23	67
1,2-dimethoxy-ethane (glyme, DME)	$C_4H_{10}O_2$	90.12	84.5	-69.2	0.8637	Miscible	7.3	-2
dimethyl-formamide (DMF)	C_3H_7NO	73.09	153	-60.48	0.9445	Miscible	38.25	58
dimethyl sulfoxide (DMSO)	C_2H_6OS	78.13	189	18.4	1.092	25.3	47	95
1,4-dioxane	$C_4H_8O_2$	88.11	101.1	11.8	1.033	Miscible	2.21(25)	12
ethanol	C_2H_6O	46.07	78.5	-114.1	0.789	Miscible	24.6	13
ethyl acetate	$C_4H_8O_2$	88.11	77	-83.6	0.895	8.7	6(25)	-4
ethylene glycol	$C_2H_6O_2$	62.07	195	-13	1.115	Miscible	37.7	111
glycerin	$C_3H_8O_3$	92.09	290	17.8	1.261	Miscible	42.5	160
heptane	C_7H_{16}	100.20	98	-90.6	0.684	0.01	1.92	-4
Hexamethylphosphoramide (HMPA)	$C_6H_{18}N_3OP$	179.20	232.5	7.2	1.03	Miscible	31.3	105
Hexamethylphosphorous triamide (HMPT)	$C_6H_{18}N_3P$	163.20	150	-44	0.898	Miscible	??	26
hexane	C_6H_{14}	86.18	69	-95	0.659	0.0014	1.89	-22
methanol	CH_4O	32.04	64.6	-98	0.791	Miscible	32.6(25)	12
methyl *t*-butyl ether (MTBE)	$C_5H_{12}O$	88.15	55.2	-109	0.741	5.1	??	-28
methylene chloride	CH_2Cl_2	84.93	39.8	-96.7	1.326	1.32	9.08	1.6
N-methyl-2-pyrrolidinone (NMP)	CH_5H_9NO	99.13	202	-24	1.033	10	32	91

nitromethane	CH_3NO_2	61.04	101.2	-29	1.382	9.50	35.9	35
pentane	C_5H_{12}	72.15	36.1	-129.7	0.626	0.04	1.84	-49
Petroleum ether (ligroine)	--	--	30-60	-40	0.656	--	--	-30
1-propanol	C_3H_8O	60.10	97	-126	0.803	Miscible	20.1(25)	22
2-propanol	C_3H_8O	60.10	82.4	-88.5	0.785	Miscible	18.3(25)	12
pyridine	C_5H_5N	79.10	115.2	-41.6	0.982	Miscible	12.3(25)	17
tetrahydrofuran (THF)	C_4H_8O	72.106	65	-108.4	0.8833	soluble[5]	7.52	-14
toluene	C_7H_8	92.14	110.6	-93	0.867	0.05	2.38(25)	4
triethyl amine	$C_6H_{15}N$	101.19	88.9	-114.7	0.728	0.02	2.4	-11
water	H_2O	18.02	100.00	0.00	0.998	--	78.54	--
water, heavy	D_2O	20.03	101.3	4	1.107	Miscible	??	--
o-xylene	C_8H_{10}	106.17	144	-25.2	0.897	Insoluble	2.57	32
m-xylene	C_8H_{10}	106.17	139.1	-47.8	0.868	Insoluble	2.37	27
p-xylene	C_8H_{10}	106.17	138.4	13.3	0.861	Insoluble	2.27	27

Notes:

1. This table was orginally from: Professor Murov's Organic solvent table
2. You can find more detailed information (Health & Safety, Physical, Regulatory, Environmental) on various organic solvents from NCMS
3. The values in the table above were obtained from the CRC (87th edition), or Vogel's *Practical Organic Chemistry* (5th ed.).
4. T = 20 °C unless specified otherwise.
5. The water solubility of THF is complex. See: ref
6. Solvent guides for following Green Chemistry principles are available at: https://organicdivision.org/GreenChemistry/
7. A PDF version of this page is available here.

Questions or Comments? Please Contact:
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