




GSK Solvent Selection Guide 2009

Classification	Solvent <small>click on solvent name for hyperlink to more detail</small>	Cas number	Melting point °C	Boiling Point °C	Waste	Environ- mental Impact	Health	Flamm- ability & Explosion	Reactivity/ Stability	Life Cycle Score	Legislation Flag	EH&S Red Flag
Water	Water	7732-18-5	0	100	4	10	10	10	10	10		
Alcohol	2-Ethyl hexanol	104-76-7	-76	185	9	5	6	9	10	6		
	Glycerol	56-81-5	18	290	6	7	8	10	9	8		
	Cyclohexanol	108-93-0	25	161	6	6	7	9	9	8		
	Ethylene glycol	107-21-1	-13	197	5	8	7	10	9	9		
	1,4-butanediol	110-63-4	20	235	6	6	8	10	10	4		
	Isoamyl alcohol	123-51-3	-117	131	6	6	7	9	10	6		
	1,2-propanediol	57-55-6	-60	188	6	6	10	10	10	3		
	1,3-propanediol	504-63-2	-27	214	6	6	9	10	10	3		
	Benzyl alcohol	100-51-6	-15	205	6	6	7	10	7	6		
	2-Pentanol	6032-29-7	-50	119	6	6	6	8	8	6		
	1-Butanol	71-36-3	-89	118	5	7	5	8	9	5		
	2-Butanol	78-92-2	-115	100	4	6	8	7	9	6		
	Ethanol IMS	64-17-5	-114	78	3	8	8	6	9	9		
	t-Butanol	75-65-0	25	82	3	9	6	6	10	8		
	Methanol	67-56-1	-98	65	4	9	5	5	10	9		
	2-Propanol	67-63-0	-88	82	3	9	8	6	8	4		
	1-Propanol	71-23-8	-127	97	4	7	5	7	10	7		
2-Methoxyethanol	109-86-4	-85	124	3	8	2	7	6	7			
Ester	t-Butyl acetate	540-88-5	-78	95	6	9	8	6	10	8		
	n-octyl acetate	112-14-1	-39	210	9	5	5	8	10	6		
	Butyl acetate	123-86-4	-77	126	7	7	8	8	10	5		
	Ethylene carbonate	96-49-1	36	248	6	7	5	10	9			
	Propylene carbonate	108-32-7	-55	242	6	7	5	8	9			
	Isopropyl acetate	108-21-4	-73	89	5	7	7	6	9	7		
	Ethyl lactate	97-64-3	-23	154	7	5	4	8	10			
	Propyl acetate	109-60-4	-92	102	5	7	8	6	10	4		
	Dimethyl carbonate	616-38-6	-1	91	4	8	7	6	10	8		
	methyl lactate	547-64-8	-66	144	5	9	4	8	9	5		
	Ethyl acetate	141-78-6	-84	77	4	8	8	4	8	6		
	Ethyl propionate	105-37-3	-74	99	5	7	4	6	6			
	Methyl acetate	79-20-9	-98	57	3	9	7	4	9	7		
Ethyl formate	109-94-4	-80	54	4	6	5	4	9				
Ketone	Cyclohexanone	108-94-1	-32	155	6	8	6	8	9	6		
	Cyclopentanone	120-92-3	-51	131	7	6	6	8	10	6		
	2-Pentanone	107-87-9	-78	102	5	6	6	7	10	4		
	3-Pentanone	96-22-0	-42	102	5	6	8	7	6	4		
	Methylisobutyl ketone	108-10-1	-84	117	6	6	6	7	8	2		
Acid	Acetone	67-64-1	-95	56	3	9	8	4	8	7		
	Methyl ethyl ketone	78-93-3	-87	80	3	7	8	4	8	3		
	Propionic acid	79-09-4	-21	141	4	8	6	8	8	7		
Aromatic	acetic anhydride	108-24-7	-73	140	5	8	4	8	6	6		
	Acetic acid	64-19-7	17	118	4	8	6	8	7	8		
Hydrocarbon	Mesitylene	108-67-8	-45	165	8	3	7	6	10	7		
	Cumene	98-82-8	-96	152	7	5	6	8	5	7		
	p-Xylene	106-42-3	-13	138	7	2	6	5	10	7		
	Toluene	108-88-3	-95	111	6	3	4	4	10	7		
	Benzene	71-43-2	6	80	5	6	1	3	10	7		
Ether	cis-Decalin	493-01-6	-43	196	7	3	7	6	7	7		
	ISOPAR G	64742-48-9	-60	163	8	2	9	6	10			
	Isooctane	540-84-1	-107	99	6	4	8	3	10	7		
	Methyl cyclohexane	108-87-2	-127	101	6	5	8	3	10	7		
	Cyclohexane	110-82-7	7	81	5	5	7	2	10	7		
	Heptane	142-82-5	-91	98	6	3	8	3	10	7		
	Pentane	109-66-0	-130	36	5	6	8	2	10	7		
	Methylcyclopentane	96-37-7	-142	72	6	4	5	2	9	7		
	2-Methylpentane	107-83-5	-153	60	5	4	7	2	10	7		
	Hexane	110-54-3	-95	69	5	3	4	2	10	7		
Ether	Petroleum spirit	8032-32-4	-73	55	6	2	2	3	10	7		
	Di(ethylene glycol)	111-46-6	-10	246	6	8	7	9	9	8		
	Ethoxybenzene	103-73-1	-29	170	8	4	7	10	10			
	Tri(ethylene glycol)	112-27-6	-7	285	6	8	6	10	9	7		
	Sulfolane	126-33-0	28	282	5	9	6	10	10			
	DEG monobutyl ether	112-34-5	-68	231	6	7	7	9	6	7		
	Anisole	100-66-3	-38	154	6	6	7	7	6	5		
	Diphenyl ether	101-84-8	27	258	8	5	4	8	6			
	Dibutyl ether	142-96-1	-95	140	7	7	4	5	5	4		
	t-Amyl methyl ether	994-05-8	-80	86	5	5	5	5	9	8		
	t-Butylmethyl ether	1634-04-4	-109	55	4	5	5	3	9	8		
	Cyclopentyl methyl ether	5614-37-9	-140	106	6	4	4	5	8	4		
	t-Butyl ethyl ether	637-92-3	-74	70	5	5	4	4	9	8		
	2-Methyltetrahydrofuran	96-47-9	-137	78	4	5	4	3	6	4		
	Diethyl ether	60-29-7	-116	35	4	4	5	2	4	6		
	Bis(2-methoxyethyl) ether	111-96-6	-68	162	4	5	2	8	4	6		
	Dimethyl ether	115-10-6	-141	-25	3	5	7	1	4	7		
1,4-Dioxane	123-91-1	12	102	3	4	4	4	5	6			
Tetrahydrofuran	109-99-9	-108	65	3	5	6	3	4	4			
1,2-Dimethoxyethane	110-71-4	-58	85	4	5	2	4	4	7			
Diisopropyl ether	108-20-3	-86	68	4	3	8	1	1	9			
Dipolar aprotic	Dimethylpropylene urea	7226-23-5	-23	247	7	7	4	9	7	3		
	Dimethyl sulfoxide	67-68-5	19	189	5	5	7	9	2	6		
	Formamide	75-12-7	3	220	4	7	2	10	8	8		
	Dimethyl formamide	68-12-2	-61	153	4	6	2	9	9	7		
	N-Methylformamide	123-39-7	-4	200	4	6	2	10	10	7		
	N-Methyl pyrrolidone	872-50-4	-24	202	5	6	3	9	8	4		
	Propanenitrile	107-12-0	-93	97	3	6	4	6	9			
	Dimethyl acetamide	127-19-5	-20	165	5	6	2	10	8	2		
Halogenated	Acetonitrile	75-05-8	-45	82	2	6	6	6	10	3		
	1,2-Dichlorobenzene	95-50-1	-17	180	7	4	6	10	9	8		
	1,2,4-Trichlorobenzene	120-82-1	17	214	7	4	4	9	10	8		
	Chlorobenzene	108-90-7	-45	132	6	6	4	8	10	8		
	trichloroacetonitrile	545-06-2	-42	83	5	6	6	7	10			
	Chloroacetic acid	79-11-8	61	189	4	6	6	10	8	7		
	trichloroacetic acid	76-03-9	58	197	3	6	6	10	6	7		
	Perfluorotoluene	434-64-0	-66	104	5	3	4	5	10			
	Perfluorocyclohexane	355-68-0	51	53	5	5	3	5	10			
	Carbon tetrachloride	56-23-5	-23	77	4	5	3	4	10	7		
	Dichloromethane	75-09-2	-95	40	3	6	4	6	9	7		
	Perfluorohexane	355-42-0	-86	57	4	4	3	5	10			
	Fluorobenzene	462-06-6	-42	85	5	3	6	5	9	1		
	Chloroform	67-66-3	-64	61	3	6	3	6	9	6		
	Perfluorocyclic ether	335-36-4	-88	103	5	2	3	7	10			
	Trifluoroacetic acid	76-05-1	-15	72	2	5	6	7	8			
	Trifluorotoluene	98-08-8	-29	102	5	4	1	5	9			
1,2-Dichloroethane	107-06-2	-36	84	4	4	2	6	10	7			
2,2,2-Trifluoroethanol	75-89-8	-43	74	3	5	2	6	9	7			
Base	N,N-Dimethylaniline	121-69-7	3	194	7	5	4	8	8	3		
	Triethylamine	121-44-8	-15	89	4	5	3	4	8	7		
	Pyridine	110-86-1	-42	115	3	4	4	7	9	2		
Other	Nitromethane	75-52-5	-29	101	3	8	4	7	2			
	carbon disulfide	75-15-0	-111	46	4	6	2	1	6	8		

Legislation Flag

	Substitution recommended - There are no current restrictions but future regulatory restrictions may apply
	Substitution recommended - existing regulatory restrictions apply
	Must be substituted - A regulatory ban applies



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Classification	Solvent	CAS number	Melting point °C	Boiling point °C	Waste recycling, incineration, VOC, and biotreatment issues	Environmental Impact fate and effects on the environment	Health acute and chronic effects on human health and exposure potential	Flammability & Explosion storage and handling	Reactivity/ Stability factors affecting the stability of the solvent	Life Cycle Score Environmental Impacts to produce the solvent	Legislation Flag alerts regulatory restrictions
Greenest	Water	7732-18-5	0	100	4	10	10	10	10	10	
Alcohols	1-Butanol	71-36-3	-89	118	5	7	5	8	9	5	
	2-Butanol	78-92-2	-115	100	4	6	8	7	9	6	
	Ethanol/IMS	64-17-5	-114	78	3	8	8	6	9	9	
	t-Butanol	75-65-0	25	82	3	9	6	6	10	8	
	Methanol	67-56-1	-98	65	4	9	5	5	10	9	
	2-Propanol	67-63-0	-88	82	3	9	8	6	8	4	
	1-Propanol	71-23-8	-127	97	4	7	5	7	10	7	
	2-Methoxyethanol	109-86-4	-85	124	3	8	2	7	6	7	
Ester	t-Butyl acetate	540-88-5	-78	95	6	9	8	6	10	8	
	Isopropyl acetate	108-21-4	-73	89	5	7	7	6	9	7	
	Propyl acetate	109-60-4	-92	102	5	7	8	6	10	4	
	Dimethyl carbonate	616-38-6	-1	91	4	8	7	6	10	8	
	Ethyl acetate	141-78-6	-84	77	4	8	8	4	8	6	
	Methyl acetate	79-20-9	-98	57	3	9	7	4	9	7	
Ketone	Methylisobutyl ketone	108-10-1	-84	117	6	6	6	7	8	2	
	Acetone	67-64-1	-95	56	3	9	8	4	9	7	
	Methylethyl ketone	78-93-3	-87	80	3	7	8	4	8	3	
Organic Acids	Propionic acid	79-09-4	-21	141	4	8	6	8	8	7	
	Acetic acid (glacial)	64-19-7	17	118	4	8	6	8	7	8	
Aromatics	p-Xylene	106-42-3	-13	138	7	2	6	5	10	7	
	Toluene	108-88-3	-95	111	6	3	4	4	10	7	
	Benzene	71-43-2	6	80	5	6	1	3	10	7	
Hydrocarbons	Isooctane	540-84-1	-107	99	6	4	8	3	10	7	
	Cyclohexane	110-82-7	7	81	5	5	7	2	10	7	
	Heptane	142-82-5	-91	98	6	3	8	3	10	7	
	2-Methylpentane	107-83-5	-153	60	5	4	7	2	10	7	
	Hexane	110-54-3	-95	69	5	3	4	2	10	7	
	Petroleum spirit	8032-32-4	-73	55	6	2	2	3	10	7	
Ethers	t-Butyl methyl ether	1634-04-4	-109	55	4	5	5	3	9	8	
	Cyclopentyl methyl ether	5614-37-9	-140	106	6	4	4	5	8	4	
	2-Methyl THF	96-47-9	-137	78	4	5	4	3	6	4	
	Diethyl ether	60-29-7	-116	35	4	4	5	2	4	6	
	Bis(2-methoxyethyl) ether	111-96-6	-68	162	4	5	2	8	4	6	
	1,4-Dioxane	123-91-1	12	102	3	4	4	4	5	6	
	Tetrahydrofuran	109-99-9	-108	65	3	5	6	3	4	4	
	1,2-Dimethoxyethane	110-71-4	-58	85	4	5	2	4	4	7	
Diisopropyl ether	108-20-3	-86	68	4	3	8	1	1	9		
Dipolar aprotics	Dimethyl sulfoxide	67-68-5	19	189	5	5	7	9	2	6	
	Dimethyl formamide	68-12-2	-61	153	4	6	2	9	9	7	
	N-Methylformamide	123-39-7	-4	200	4	6	2	10	10	7	
	N-Methyl pyrrolidone	872-50-4	-24	202	5	6	3	9	8	4	
	Dimethyl acetamide	127-19-5	-20	165	5	6	2	10	8	2	
	Acetonitrile	75-05-8	-45	82	2	6	6	6	10	3	
Chlorinated	Carbon tetrachloride	56-23-5	-23	77	4	5	3	4	10	7	
	Dichloromethane	75-09-2	-95	40	3	6	4	6	9	7	
	Chloroform	67-66-3	-64	61	3	6	3	6	9	6	
	1,2-Dichloroethane	107-06-2	-36	84	4	4	2	6	10	7	

Legislation Flag	
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	Few issues (bp°C)	Some issues (bp°C)	Major issues
Chlorinated	<p>....before using chlorinated solvents, have you considered TBME, isopropyl acetate, ethyl acetate, 2-Methyl THF or Dimethyl Carbonate?</p>		Dichloromethane ** Carbon tetrachloride ** Chloroform ** 1,2-Dichloroethane **
Greenest Option	Water (100°C)		
Alcohols	1-Butanol (118°C) 2-Butanol (100°C)	Ethanol/IMS (78°C) t-Butanol (82°C)	2-Methoxyethanol **
Esters	t-Butyl acetate (95°C) Isopropyl acetate (89°C) Propyl acetate (102°C) Dimethyl Carbonate (91°C)	Methanol (65°C) Ethyl acetate (77°C) Methyl acetate (57°C)	
Ketones		Methyl isobutyl ketone (117°C) Acetone (56°C)	Methyl ethyl ketone
Aromatics		p-Xylene (138°C) Toluene ** (111°C)	Benzene **
Hydrocarbons		Isooctane (99°C) Cyclohexane (81°C) Heptane (98°C)	Petroleum spirit ** 2-Methylpentane Hexane
Ethers		t-Butyl methyl ether (55°C) 2-Methyl THF (78°C) Cyclopentyl methyl ether (106°C)	1,4-Dioxane ** 1,2-Dimethoxyethane ** Tetrahydrofuran Diethyl ether Diisopropyl ether **
Dipolar aprotics		Dimethyl sulfoxide (189°C)	Dimethyl formamide ** N-Methyl pyrrolidone ** N-Methyl formamide ** Dimethyl acetamide ** Acetonitrile

** = EHS Regulatory Alerts: please consult the detailed solvent guide and the GSK Chemicals Legislation Guide for more information