UPPER CRITICAL (UCST) AND LOWER CRITICAL (LCST) SOLUTION TEMPERATURES OF BINARY POLYMER SOLUTIONS

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Liquid-liquid demixing in solutions of polymers in low molar mass solvents is not a rare phenomenon. Demixing depends on concentration, temperature, pressure, molar mass and molar mass distribution function of the polymer, chain branching and end groups of the polymer, the chemical nature of the solvent, isotope substitution in solvents or polymers, chemical composition of copolymers and its distributions, and other variables. Phase diagrams of polymer solutions can therefore show a quite complicated behavior when they have to be considered in detail (see Ref. 1a).

Polymer solutions can undergo demixing when cooling a homogeneous solution as well as when heating such a solution. The corresponding cloud-point curves show a maximum (UCST behavior) or a minimum (LCST behavior). For common polymer solutions, the LCST region is at higher temperatures (in many cases near the critical temperature of the solvent) than the UCST region. The temperature range between both extrema provides the essential information where the one-phase region of a polymer solution can be found. In the case of monodisperse polymers the extrema are equal to the critical points. However, in the case of polydisperse polymers with distribution functions, these extrema are threshold temperatures whereas the critical point shifts to higher concentrations on the shoulder of the cloud-point curve. Usually, the critical concentration is much more strongly influenced than the critical temperature. Thus, the table below does not distinguish between threshold and critical temperatures.

UCST and LCST values depend somewhat on pressure. LCST values in the table are usually given at the vapor pressure of the solvent at this temperature. UCST values are measured in most cases at normal pressure; data at higher pressures are neglected here. The interested reader can find such information, for example, in Refs. 76, 84, 104, 157, 165, 177, 185-187, or 192.

However, UCST and LCST values of a given polymer/solvent pair depend strongly on the molar mass of the polymer. In the case of monodisperse polymers, this dependency can be described in good approximation by the so-called Shultz-Flory plot (see Refs. 6 and 8):

$$\frac{1}{T_{\text{crit}}} = \frac{1}{\theta}\left[1 + const.\left(\frac{1}{\sqrt{r}} - \frac{1}{2r}\right)\right] \qquad (1)$$

where r denotes the number of segments of a polymer (being proportional to the degree of polymerization or to the molar mass or molar volume of the polymer). Extrapolation to $r \rightarrow \infty$, i.e., to infinite molar mass, leads to the value of the θ-temperature. This θ-temperature is the highest temperature for UCST behavior or the lowest temperature for LCST behavior and a given polymer/solvent pair. In the case of polydisperse polymers, the segment number in equation (1) is to be replaced by its weight average, r_w (related to M_w). The constant in equation (1) reflects further thermodynamic properties of the given polymer/solvent pair, but should not depend on molar mass. A detailed discussion can be found in Ref. 1b.

The printed table in the *Handbook* provides only one data line for a given polymer/solvent pair and does not show the molar mass dependence of UCST or LCST data. The entire table with all data at different molar masses for many of the systems is given in the electronic version, however. Nevertheless, the necessary molar mass information for a system is always provided in the table by the corresponding number average, M_n, mass average, M_w, or viscosity average, M_η, values of the polymer as given in the original sources.

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
Acrylonitrile/butadiene copolymer							
(18% Acrylonitrile)			840000	Ethyl acetate		427	220
(26% Acrylonitrile)			1000000	Ethyl acetate		412	220
Butadiene/α-methylstyrene copolymer							
(10% α-Methylstyrene)			100000	Ethyl acetate	387	393	220
Carbon monoxide/ethylene copolymer (1:1, alternating)							
		1000000		1,1,1,3,3,3-Hexafluoro-2-propanol		453	159
Cellulose diacetate			120000	Benzyl alcohol	372		86
	59900	75500		2-Butanone	279.7	471.5	111
	59300			2-Propanone	216.2	438.2	42
Cellulose diacetate/styrene graft copolymer (77.4 wt% grafted polystyrene)							
		750000		*N,N*-Dimethylformamide	262	399	106
		750000		Tetrahydrofuran		363	106
Cellulose nitrate (13.3 wt% N)							
	unknown			2-Propanone	328	182	148

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
Cellulose triacetate							
			20000	Benzyl alcohol	322		86
		100500		2-Propanone	290.0	472.0	42
Cellulose tricaprylate							
	infinite			*N,N*-Dimethylformamide	413		5
	infinite			3-Phenyl-1-propanol	321		5
Decamethyltetrasiloxane							
	310.69			Tetradecafluorohexane	332.59		195
N,N-Dimethylacrylamide/2-butoxyethyl acrylate copolymer (50 wt% 2-butoxyethyl acrylate)							
				Water		<273.2	164
N,N-Dimethylacrylamide/butyl acrylate copolymer							
(15 wt% Butyl acrylate)				Water		346.2	164
(20 wt% Butyl acrylate)				Water		323.2	164
(30 wt% Butyl acrylate)				Water		294.2	164
(35 wt% Butyl acrylate)				Water		281.2	164
N,N-Dimethylacrylamide/2-ethoxyethyl acrylate copolymer							
(50 wt% 2-Ethoxyethyl acrylate)				Water		319.2	164
(75 wt% 2-Ethoxyethyl acrylate)				Water		285.2	164
N,N-Dimethylacrylamide/ethyl acrylate copolymer							
(25 wt% Ethyl acrylate)				Water		347.2	164
(30 wt% Ethyl acrylate)				Water		334.2	164
(50 wt% Ethyl acrylate)				Water		287.2	164
(55 wt% Ethyl acrylate)				Water		<273.2	164
N,N-Dimethylacrylamide/2-methoxyethyl acrylate copolymer							
(38 mol% 2-Methoxyethyl acrylate)				Water		353	184
(45 mol% 2-Methoxyethyl acrylate)				Water		333	184
(55 mol% 2-Methoxyethyl acrylate)				Water		315	184
(68 mol% 2-Methoxyethyl acrylate)				Water		305	184
(82 mol% 2-Methoxyethyl acrylate)				Water		288	184
(92 mol% 2-Methoxyethyl acrylate)				Water		283	184
N,N-Dimethylacrylamide/methyl acrylate copolymer							
(30 wt% Methyl acrylate)				Water		371.2	164
(40 wt% Methyl acrylate)				Water		338.2	164
(50 wt% Methyl acrylate)				Water		314.2	164
(55 wt% Methyl acrylate)				Water		294.2	164
(60 wt% Methyl acrylate)				Water		279.2	164
(70 wt% Methyl acrylate)				Water		<273.2	164
N,N-Dimethylacrylamide/propyl acrylate copolymer							
(20 wt% Propyl acrylate)				Water		353.2	164
(30 wt% Propyl acrylate)				Water		337.2	164
(40 wt% Propyl acrylate)				Water		294.2	164
(50 wt% Propyl acrylate)				Water		281.2	164
Dimethylsiloxane/methylphenylsiloxane copolymer (15 wt% methylphenylsiloxane)							
	9100	41200		Anisole	291.45		198

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
	9100	41200		2-Propanone	282.45		198
Ethylene/propylene copolymer (33 mol% ethylene)							
			145000	Cyclohexane		534	101
			145000	Cyclopentane		490	101
			145000	2,2-Dimethylbutane		428	101
			145000	2,3-Dimethylbutane		452	101
			145000	3,4-Dimethylhexane		541	101
			145000	2,2-Dimethylpentane		472	101
			145000	2,3-Dimethylpentane		500	101
			145000	2,4-Dimethylpentane		464	101
			145000	3-Ethylpentane		511	101
			145000	Heptane		502	101
			145000	Hexane		455	101
			145000	2-Methylbutane		396	101
			145000	Methylcyclohexane		558	101
			145000	Methylcyclopentane		512	101
			145000	2-Methylhexane		486	101
			145000	Nonane		558	101
			145000	Octane		528	101
			145000	Pentane		409	101
			145000	2,2,4,4-Tetramethylpentane		539	101
			145000	2,2,3-Trimethylbutane		500	101
			145000	2,2,4-Trimethylpentane		503	101
Ethylene/propylene copolymer (43 mol% ethylene)							
	70000	140000		Hexane		436	127
	70000	140000		2-Methylpentane		474	127
	70000	140000		Pentane		441	127
Ethylene/propylene copolymer (53 mol% ethylene)							
			154000	2,2-Dimethylbutane		407	101
			154000	2,3-Dimethylbutane		437	101
			154000	2,2-Dimethylpentane		453	101
			154000	2,3-Dimethylpentane		488	101
			154000	2,4-Dimethylpentane		445	101
			154000	3-Ethylpentane		500	101
			154000	Heptane		493	101
			154000	Hexane		443	101
			154000	Pentane		395	101
			154000	2,2,3-Trimethylbutane		488	101
			154000	2,3,4-Trimethylhexane		565	101
			154000	2,2,4-Trimethylpentane		484	101
Ethylene/propylene copolymer (63 mol% ethylene)							
			236000	Cyclohexane		526	101
			236000	Cyclopentane		481	101
			236000	2,3-Dimethylbutane		429	101
			236000	3,4-Dimethylhexane		530	101
			236000	2,2-Dimethylpentane		444	101
			236000	2,3-Dimethylpentane		482	101
			236000	2,4-Dimethylpentane		434	101

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
			236000	3-Ethylpentane		492	101
			236000	Heptane		485	101
			236000	Hexane		436	101
			236000	2-Methylbutane		348	101
			236000	Methylcyclopentane		498	101
			236000	Nonane		547	101
			236000	Octane		512	101
			236000	Pentane		387	101
			236000	2,2,4,4-Tetramethylpentane		528	101
			236000	2,2,3-Trimethylbutane		479	101
			236000	2,2,4-Trimethylpentane		479	101
Ethylene/propylene copolymer (75 mol% ethylene)							
			109000	2,2-Dimethylpentane		431	101
			109000	2,4-Dimethylpentane		425	101
			109000	Heptane		475	101
			109000	Hexane		427	101
			109000	Nonane		542	101
			109000	Octane		509	101
			109000	Pentane		378	101
			109000	2,2,4,4-Tetramethylpentane		523	101
			109000	2,2,4-Trimethylpentane		469	101
Ethylene/propylene copolymer (81 mol% ethylene)							
			195000	Cyclohexane		522	101
			195000	Cyclopentane		474	101
			195000	2,2-Dimethylbutane		381	101
			195000	2,3-Dimethylbutane		413	101
			195000	2,4-Dimethylhexane		478	101
			195000	2,5-Dimethylhexane		466	101
			195000	3,4-Dimethylhexane		522	101
			195000	2,2-Dimethylpentane		425	101
			195000	2,3-Dimethylpentane		471	101
			195000	2,4-Dimethylpentane		420	101
			195000	3-Ethylpentane		478	101
			195000	Heptane		468	101
			195000	Hexane		425	101
			195000	2-Methylbutane		327	101
			195000	Methylcyclohexane		541	101
			195000	Methylcyclopentane		493	101
			195000	2-Methylhexane		453	101
			195000	3-Methylhexane		459	101
			195000	Nonane		540	101
			195000	Octane		506	101
			195000	Pentane		370	101
			195000	2,2,4,4-Tetramethylpentane		519	101
			195000	2,2,3-Trimethylbutane		461	101
			195000	2,2,4-Trimethylpentane		460	101
Ethylene/vinyl acetate copolymer							
(2.3 wt% Vinyl acetate)	52000	465000		Diphenyl ether	404.2		143
(4.0 wt% Vinyl acetate)	47000	280000		Diphenyl ether	392.5		143

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
(7.1 wt% Vinyl acetate)	34000	460000		Diphenyl ether	378.2		143
(9.5 wt% Vinyl acetate)	53000	350000		Diphenyl ether	367.3		143
(9.7 wt% Vinyl acetate)	55000	490000		Diphenyl ether	370.8		143
(12.1 wt% Vinyl acetate)	66000	300000		Diphenyl ether	360.4		143
(42.6 mol% Vinyl acetate)	14800	41500		Methyl acetate	307.0		130
Ethylene/vinyl alcohol copolymer							
(87.2 mol% Vinyl alcohol)			infinite	Water	463.55	285.65	44
(88.9 mol% Vinyl alcohol)			infinite	Water	449.15	290.75	44
(91.0 mol% Vinyl alcohol)			infinite	Water	428.45	302.95	44
(94.1 mol% Vinyl alcohol)			infinite	Water	389.25	324.45	44
Ethylene oxide/propylene oxide copolymer							
(20.0 mol% Ethylene oxide)	3400			Water		303	211
(27.0 mol% Ethylene oxide)	3000			Water		309	210
(30.0 mol% Ethylene oxide)	5400			Water		313	211
(38.5 mol% Ethylene oxide)	5000			Water		309	210
(50.0 mol% Ethylene oxide)	3900			Water		323	211
(58.8 mol% Ethylene oxide)	3000			Water		326.65	210
(72.4 mol% Ethylene oxide)		36000		Water		333	153
(79.5 mol% Ethylene oxide)		30800		Water		345	153
(86.6 mol% Ethylene oxide)		30100		Water		355.5	153
Gutta Percha							
			194000	Propyl acetate	318.95		7
Hydroxypropylcellulose							
		75000		Water		318.45	43
		300000		Water		331.25	43
N-Isopropylacrylamide/acrylamide copolymer							
(15 mol% Acrylamide)		3100000		Water		315.15	172
(30 mol% Acrylamide)		4500000		Water		326.15	172
(45 mol% Acrylamide)		3900000		Water		347.15	172
N-Isopropylacrylamide/1-deoxy-1-methacrylamido-*D*-glucitol							
(12.9 mol% Glucitol)	78000	170000		Water		311.3	218
(13.7 mol% Glucitol)	51600	110000		Water		314.9	218
(14.0 mol% Glucitol)	145000	432000		Water		307.5	218
N-Isopropylacrylamide/*N*-isopropylmethacrylamide copolymer							
(10.56 mol% *N*-Isopropylmethacrylamide)	55300	177000		Water		307.15	212
(30.00 mol% *N*-Isopropylmethacrylamide)	28800	92000		Water		309.75	212
(39.99 mol% *N*-Isopropylmethacrylamide)	23100	74000		Water		311.05	212
(59.89 mol% *N*-Isopropylmethacrylamide)	23100	74000		Water		314.65	212
(79.81 mol% *N*-Isopropylmethacrylamide)	16600	53000		Water		317.35	212
(89.99 mol% *N*-Isopropylmethacrylamide)	14700	47000		Water		318.75	212
Methylcellulose (about 30 mol% methyl subsitution)							
			70000	Water		324.75	47
Methylcellulose/hydroxypropylcellulose copolymer (25 mol% methyl, 8 mol% hydroxypropyl subsitution)			80000	Water		340.15	63
Natural rubber							
		300000		Pentane		403	10
			74500	2-Pentanone	274.45		7

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
Phenol-formaldehyde resin (acetylated)				2-Ethoxyethanol	378.2		200
Poly(acrylic acid)		120000		Tetrahydrofuran		268.3	189
Poly[bis(2,3-dimethoxypropanoxy) phosphazene]							
	1070000	1500000		Water		317.15	183
Poly[bis(2-(2'-methoxyethoxy)ethoxy) phosphazene]							
	667000	1000000		Water		338.15	183
Poly[bis(2,3-bis(2-methoxyethoxy) propanoxy)phosphazene]							
	714000	1000000		Water		311.15	183
Poly[bis(2,3-bis(2-(2'-methoxyethoxy) ethoxy)propanoxy)phosphazene]							
	1420000	1700000		Water		322.65	183
Poly[bis(2,3-bis(2-(2'-(2"-dimethoxyethoxy) ethoxy)ethoxy)propanoxy)phosphazene]							
	857000	1200000		Water		334.65	183
Poly(1-butene) (atactic)							
	infinite			Anisole	359.4		11
	infinite			Toluene	356.2		28
Poly(1-butene) (isotactic)							
	infinite			Anisole	362.3		11
			530000	Cyclopentane		498	102
			530000	2,2-Dimethylbutane		444	102
			530000	2,5-Dimethylhexane		519	102
			530000	3,4-Dimethylhexane		559	102
			530000	2,3-Dimethylpentane		517	102
			530000	2,4-Dimethylpentane		480	102
			530000	3-Ethylpentane		523	102
			530000	Heptane		509	102
	infinite			Hexane		464	102
			530000	2-Methylbutane		416	102
	infinite			Nonane		564	102
			530000	Octane		540	102
	infinite			Pentane		421	102
			530000	2,2,3-Trimethylbutane		507	102
Poly(butyl methacrylate)							
	278000	470000		1-Butanol	287.15		132
	278000	470000		Decane	357.25		132
	278000	470000		Ethanol	315.25		132
	278000	470000		Heptane	342.55		132
	278000	470000		Octane	345.80		132
	278000	470000		1-Pentanol	286.30		132
	278000	470000		2-Propanol	294.90		132
	278000	470000		2,2,4-Trimethylpentane	347.50		132
Poly(2-chlorostyrene)							
	infinite			Benzene		298	40
Poly(4-chlorostyrene)							
	infinite			Benzene	274.0		22
	infinite			2-(Butoxyethoxy)ethanol		323.25	46
	infinite			Butyl acetate		502.4	22
	infinite			*tert*-Butyl acetate		338.55	46

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
	infinite			Chlorobenzene	128.8		22
	infinite			2-(Ethoxyethoxy)ethanol		300.95	46
	infinite			Ethyl acetate		613.2	22
	infinite			Ethylbenzene	283.2		22
	infinite			Ethylbenzene	258.45		46
	infinite			Ethyl chloroacetate	271.35		46
	infinite			Isopropyl acetate		348.65	46
	infinite			Isopropylbenzene	332.15		46
	infinite			Isopropyl chloroacetate	264.95		46
	infinite			Methyl chloroacetate	337.75		46
	infinite			Propyl acetate		908.7	22
	infinite			Tetrachloroethene	317.55		46
	infinite			Tetrachloromethane	323.85		46
	infinite			Toluene	236.8		22
Poly(decyl methacrylate)							
	390000	468000		1-Butanol	304.85		113
	390000	468000		1-Pentanol	278.40		113
	220000	252000		2-Propanol	346.85		132
Polydimethylsiloxane (cyclic)							
	9810	10300		2,2-Dimethylpropane		433	133
	9810	10300		Tetramethylsilane		448	133, 171
Polydimethylsiloxane							
			626000	Butane		392.95	53
	infinite			Decane		603	30
	14750	16370		2,2-Dimethylpropane		428	133
	infinite			Dodecane		643	30
			626000	Ethane		259.65	53
			100000	Ethoxybenzene	341.99		108
	infinite			Heptane		528	30
	infinite			Hexadecane		708	30
	infinite			Hexane		493	30
	infinite			Octane		553	30
	infinite			Pentane		453	30
			203000	Propane		340.15	53
	14750	16370		Tetramethylsilane		443	133, 171
Poly(ethyl acrylate)							
			48000	1-Butanol	310.05		27
			48000	Ethanol	301.15		27
			380000	Methanol	287.25		27
			48000	1-Propanol	305.15		27
Polyethylene (branched)							
	8400	32000		Diphenyl ether	384.7		95, 98
	24000	123000		Diphenyl ether	396.7		95, 98
	65000	425000		Diphenyl ether	415.3		95, 98
Polyethylene (linear)							
			20000	Anisole	368.15		24
			20000	Benzyl acetate	459.65		24
			20000	Benzyl phenyl ether	437.15		24
			20000	Benzyl propionate	436.15		24
			50900	Biphenyl	383.55		25
			61100	Butyl acetate	448	497	70

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
			20000	4-*tert*-Butylphenol	466.15		24
			134000	Cyclohexane		518	101
			20000	Cyclohexanone	389.65		24
			134000	Cyclopentane		472	101
	36700	49300		Decane		563.75	91
			20000	1-Decanol	400.15		24
			20000	Dibenzyl ether	448.65		24
			134000	3,4-Dimethylhexane		515	101
			134000	2,2-Dimethylpentane		399	101
			134000	2,3-Dimethylpentane		463	101
			134000	2,4-Dimethylpentane		395	101
	12000	150000		Diphenyl ether	416.2		95, 98
			97200	Diphenylmethane	400.25		25
	60400	82600		Dodecane		610.85	91
		218000		1-Dodecanol	405.15		141
			134000	3-Ethylpentane		471	101
	36700	49300		Heptane		464.70	91
			20000	1-Heptanol	440.15		24
	36700	49300		Hexane		414.65	91
	7900	92000		1-Hexanol	458.15		154
			20000	2-Methoxynaphthalene	427.65		24
			20000	3-Methylbutyl acetate	407.15		24
			134000	Methylcyclohexane		537	101
			134000	Methylcyclopentane		488	101
	60400	82600		Nonane		531.90	91
			20000	1-Nonanol	431.15		24
			20000	4-Nonylphenol	410.15		24
	36700	49300		Octane		502.40	91
	7900	92000		1-Octanol	426.65		154
			20000	4-Octylphenol	424.65		24
			134000	Pentane		353	101
			20000	1-Pentanol	445.15		24
			175000	Pentyl acetate	421	528	70
			20000	4-*tert*-Pentylphenol	443.65		24
			20000	Phenetole	366.65		24
			134000	2,2,4,4-Tetramethylpentane		513	101
	60400	82600		Tridecane		639.30	91
			134000	2,2,3-Trimethylbutane		444	101
			134000	2,3,4-Trimethylhexane		545	101
			134000	2,2,4-Trimethylpentane		495	101
	97700	135900		Undecane		583.95	91
Poly(ethylene glycol)							
			8000	*tert*-Butyl acetate	321.2	464.2	83
			21200	*tert*-Butyl acetate	353.2	431.2	83
	6100	6200		Water		404.79	185
	10457	11615		Water		394.33	205
	40800	151000		Water		378.25	205
Poly(ethylene oxide)-b-poly[bis(methoxyethoxyethoxy)-phosphazene] block copolymer (about 67 mol% Ethylene oxide)							
	22000	31500		Water		338	222

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
Poly(ethylene oxide)-b-poly(propylene oxide)-b-poly(ethylene oxide) triblock copolymer (about 30 mol% Ethylene oxide)							
		4400		Water		286.65	209
Polyethylethylene							
	48000	52000		Diphenyl ether	411.2		95, 98
Poly(*p*-hexylstyrene)							
	infinite			2-Butanone	302.6		135
Poly(2-hydroxyethyl methacrylate)							
			77400	1-Butanol	337.25		35
			233600	2-Butanol	287		35
			233600	2-Metyl-1-propanol	342		35
			77400	1,2,3-Propanetriol	345		35
			77400	1-Propanol	311		35
Polyisobutylene							
	infinite			Anisole	377		3
			72000	Benzene		540.5	39
			703000	Butane		264.75	53
	infinite			Cycloheptane		572	34
			1500000	Cyclohexane		412	10
	infinite			Cyclooctane		637	34
			1500000	Cyclopentane		344	10
	infinite			Decane		535	34
			1500000	2,2-Dimethylbutane		376	10
			1500000	2,3-Dimethylbutane		404	10
	infinite			2,2-Dimethylhexane		454	34
	infinite			2,4-Dimethylhexane		458	34
	infinite			2,5-Dimethylhexane		446	34
	infinite			3,4-Dimethylhexane		497	34
	infinite			2,2-Dimethylpentane		404	34
	infinite			2,3-Dimethylpentane		451	34
	infinite			2,4-Dimethylpentane		403	34
	infinite			3,3-Dimethylpentane		451	34
	infinite			Diphenyl ether	306		3
	infinite			Decane		585	30
	infinite			Dodecane		582	34
	infinite			Ethylbenzene	249		3
	infinite			Ethylcyclopentane		524	34
	infinite			Ethyl heptanoate	306		3
	infinite			Ethyl hexanoate	330		3
	infinite			3-Ethylpentane		458	34
	infinite			Heptane		442	34
			72000	Hexane		428.5	39
			6030	2-Methylbutane		357.85	53
	infinite			Methylcyclohexane		526	34
	infinite			Methylcyclopentane		478	34
	infinite			2-Methylheptane		466	34
	infinite			3-Methylheptane		478	34
	infinite			2-Methylhexane		426	34
	infinite			3-Methylhexane		446	34
	infinite			2-Methylpentane		376	34

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
	infinite			3-Methylpentane		405	34
			470	2-Methylpropane		387	10
			72000	Octane		506.0	39
			6030	Pentane		403.55	53
			72000	Pentane		373.5	39
	infinite			Phenetole	357		3
			470	Propane		358	10
	infinite			Propylcyclopentane		547	34
	infinite			Toluene	260		3
	infinite			2,2,3-Trimethylbutane		445	34
	infinite			2,2,4-Trimethylpentane		435	34
1,4-*cis*-Polyisoprene							
			780000	2,5-Dimethylhexane		474.15	140
			780000	3,4-Dimethylhexane		520.15	140
			780000	2,2-Dimethylpentane		445.15	140
			780000	2,3-Dimethylpentane		484.15	140
			780000	2,4-Dimethylpentane		442.15	140
			780000	3-Methylpentane		483.15	140
			780000	Heptane		488.15	140
			780000	Hexane		434.15	140
			780000	Nonane		541.15	140
			780000	Octane		509.15	140
			780000	2,2,4,4-Tetramethylpentane		518.15	140
			780000	2,3,4-Trimethylhexane		548.15	140
			780000	2,2,4-Trimethylpentane		471.15	140
1,4-*trans*-Polyisoprene							
			180000	2,5-Dimethylhexane		451.15	140
			180000	3,4-Dimethylhexane		521.15	140
			180000	2,2-Dimethylpentane		405.15	140
			180000	2,3-Dimethylpentane		460.15	140
			180000	2,4-Dimethylpentane		404.15	140
			180000	3-Methylpentane		473.15	140
			180000	Heptane		467.15	140
			180000	Hexane		407.15	140
			180000	Nonane		540.15	140
			180000	Octane		503.15	140
			180000	2,2,4,4-Tetramethylpentane		519.15	140
			180000	2,3,4-Trimethylhexane		548.15	140
Poly(*N*-isopropylacrylamide)							
	5400	14000		Water		307.45	146
	146000	530000		Water		305.85	146
Poly(*N*-isopropylacrylamide)-poly[(*N*-acetylimino)ethylene] block copolymer (80 wt% *N*-Isopropylacrylamide)							
	5500			Water		306.2	223
Poly(*N*-isopropylacrylamide)-poly[(*N*-acetylimino)ethylene] graft copolymer (75 wt% *N*-Isopropylacrylamide)							
	6030			Water		306.2	223
Poly(*N*-isopropylmethacrylamide)							
	6250	20000		Water		319.95	212
Poly(methyl methacrylate)							

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
			127000	Acetonitrile	267.15		16
			970000	Acetonitrile	303.15		16
			50000	1-Butanol	353.25		2
	infinite			2-Butanone		482	80
	infinite			1-Chlorobutane	320	463	80
			970000	2,2-Dimethyl-3-pentanone	301.55		16
			127000	2,4-Dimethyl-3-pentanone	280.15		16
	200000	264000		2-Ethoxyethanol	312.15		196
		77000		Ethyl acetate	290	533	190
			127000	2-Ethylbutanal	264.65		16
	infinite			3-Heptanone	307.7		126
			970000	4-Heptanone	299.95		16
	infinite			3-Hexanone		522	80
	infinite			Methyl acetate		451	80
			50000	1-Methyl-4-isopropylbenzene	400.15		2
			1400000	2-Octanone	321.15		16
	572400	595300		3-Octanone	329.88		166
	infinite			3-Pentanone		506	80
			50000	1-Propanol	349.95		2
	infinite			2-Propanone		439	80
	200000	264000		Tetra(ethylene glycol)	390.15		196
			400000	Toluene	225.35		2
			50000	Trichloromethane	231.15		2
	200000	264000		Tri(ethylene glycol)	407.15		196
Poly(methyl methacrylate) (isotactic)							
	infinite			Acetonitrile	301	461	80
	infinite			2-Butanone		464	80
	infinite			1-Chlorobutane	309	454	80
	infinite			4-Heptanone	319	522	80
	infinite			3-Hexanone	279	511	80
	infinite			Methyl acetate		441	80
	infinite			3-Pentanone		497	80
	infinite			2-Propanone		428	80
Poly(4-methyl-1-pentene) (isotactic)							
			152000	Butane		388	102
			152000	Cyclopentane		505	102
			152000	2,2-Dimethylbutane		462	102
			152000	2,2-Dimethylpentane		499	102
			152000	2,4-Dimethylpentane		499	102
	infinite			Diphenyl	467.8		62
	infinite			Diphenyl ether	483.2		62
	infinite			Diphenylmethane	449.8		62
			152000	3-Ethylpentane		532	102
			152000	Heptane		522	102
			152000	Hexane		487	102
			152000	2-Methylbutane		431	102
			152000	Nonane		579	102
			152000	Octane		553	102
			152000	Pentane		441	102
			152000	2,2,3-Trimethylbutane		521	102

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
Poly(α-methylstyrene)							
	58500	61400		Butyl acetate	262.05	457.15	181
	99100	113000		Cyclohexane	293.55		152
	26000	31200		Cyclopentane	276.7	435.95	181
		289000		*trans*-Decahydronaphthalene	273		181
	69500	76500		Hexyl acetate	285.05	508.15	181
	72000	75600		Methylcyclohexane	328.9		203
	58500	61400		Pentyl acetate	287.1	484.6	181
Poly(2-methyl-5-vinylpyridine)							
			600000	Butyl acetate	287.95		20
			263000	Ethyl butyrate	319.05		20
			335000	Ethyl propionate	293.55		20
			275000	3-Methylbutyl acetate	314.75		20
			335000	4-Methyl-2-pentanone	299.95		20
			170000	2-Methylpropyl acetate	312.35		20
			165000	Pentyl acetate	316.95		20
			284000	Propionitrile	262.35		20
			152000	Propyl acetate	282.65		20
			181000	Propyl propionate	312.15		20
			233000	Tetrahydronaphthalene	316.95		20
Poly(1-pentene) (isotactic)							
			4500000	Cyclopentane		502	102
			4500000	2,2-Dimethylbutane		457	102
			4500000	3,4-Dimethylhexane		>569	102
			4500000	2,2-Dimethylpentane		502	102
			4500000	2,3-Dimethylpentane		529	102
			4500000	2,4-Dimethylpentane		493	102
			4500000	3-Ethylpentane		537	102
			4500000	Heptane		522	102
			4500000	Hexane		482	102
			4500000	2-Methylbutane		422	102
			4500000	Octane		556	102
			4500000	Pentane		433	102
			4500000	2,2,4-Trimethylpentane		527	102
Polypropylene (atactic)							
	infinite			Diphenyl ether	426.5		9
	infinite			Diethyl ether		383	68
			242000	Heptane		511	101
	infinite			Hexane		441	68
			242000	2-Methylbutane		413	101
			242000	Methylcyclohexane		564	101
	infinite			Pentane		397	68
Polypropylene (isotactic)							
			28000	Benzyl phenyl ether	429.2		31
			28000	Benzyl propionate	405.2		31
			28000	1-Butanol	395.2		31
			28000	4-*tert*-Butylphenol	413.2		31
			242000	Cyclohexane		540	101
			242000	Cyclopentane		495	101
			28000	Dibenzyl ether	433.2		31

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
			242000	2,2-Dimethylbutane		441	101
			242000	2,3-Dimethylbutane		465	101
			242000	3,4-Dimethylhexane		553	101
			242000	2,2-Dimethylpentane		489	101
			242000	2,3-Dimethylpentane		513	101
			242000	2,4-Dimethylpentane		481	101
			28000	Diphenyl	388.2		31
			28000	Diphenyl ether	395.2		31
			28000	Diphenylmethane	389.7		31
			242000	3-Ethylpentane		520	101
			28000	4-Ethylphenol	457.2		31
			242000	Heptane		511	101
			242000	Hexane		470	101
			242000	2-Methylbutane		413	101
			28000	3-Methylbutyl benzyl ether	384.2		31
			242000	Methylcyclohexane		564	101
			242000	Methylcyclopentane		518	101
			28000	4-Methylphenol	479.2		31
			28000	2-Methyl-1-propanol	395.2		31
			242000	Nonane		571	101
			242000	Octane		542	101
			28000	4-Octylphenol	379.2		31
			28000	4-Isooctylphenol	383.2		31
			242000	Pentane		422	101
			242000	2,2,4,4-Tetramethylpentane		548	101
			242000	2,2,3-Trimethylbutane		511	101
			242000	2,3,4-Trimethylhexane		585	101
			242000	2,2,4-Trimethylpentane		510	101
Poly(propylene glycol)							
	1000			Hexane	288.15		88
	575			Water		318.2	65
Polystyrene							
	34900	37000		Benzene		538.7	61
			62600	Butanedioic acid dimethyl ester	335.15		2
	3700	4000		1-Butanol	383.45		154
	91700	97200		2-Butanone		448.8	61
	545500	600000		Butyl acetate		489	181
	104000	110000		*tert*-Butyl acetate	250.0	417.9	74
			62600	Butyl stearate	387.15		2
	18400	19200		1-Chlorododecane	274.65		154
	18400	19200		1-Chlorohexadecane	337.05		154
	18400	19200		1-Chlorooctadecane	365.55		154
	18400	19200		1-Chlorotetradecane	309.35		154
	46400	51000		Cyclodecane	278.9		128
	46400	51000		Cycloheptane	276.2		128
	34900	37000		Cyclohexane	285.6	510.9	60
			236000	Cyclohexanol	353.5		8
	46400	51000		Cyclooctane	275.2		128
	91700	97200		Cyclopentane	275.2	445.5	61

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
	91500	97000		*trans*-Decahydronaphthalene	281.95		81
		4800		Decane	360.95		154
	3700	4000		1-Decanol	375.15		154
			570000	Decyl acetate		650	64
	18700	19800		Diethyl ether	235.6	314.5	51
	187000	200000		Diethyl malonate	285.8	589.6	74
	47200	50000		Diethyl oxalate	280.05		131
	151000	160000		Dimethoxymethane		401.2	51
		240000		1,4-Dimethylcyclohexane	387	482	116
			62600	Dimethyl malonate	409.15		2
			62600	Dimethyl oxalate	453.15		2
	116000	123000		Dodecadeuterocyclohexane	298.10		224
		25000		Dodecadeuteromethyl-cyclopentane	310.07		180
		4800		Dodecane	368.65		154
	3700	4000		1-Dodecanol	379.75		154
	infinite			Dodecyl acetate	285.2		206
	104000	110000		Ethyl acetate	213.9	435.4	72
	104000	110000		Ethyl butanoate		490.8	74
	221000	239000		Ethylcyclohexane	330.52		18
	9440	10000		Ethyl formate	272	451	74
		900000		Bis(2-ethylhexyl) phthalate	283.05		136
	4530	4800		Heptane	359	477	112
	3700	4000		1-Dexadecanol	386.25		154
	5500	5770		1,1,1,3,3,3-Hexadeutero-2-propanone	270	436	157
	1920	2030		Hexane	318	470	112
			62600	Hexanoic acid	448.15		2
	3700	4000		1-Hexanol	372.15		154
			62600	3-Hexanol	396.65		2
			90000	Hexyl acetate		578	64
	104000	110000		Methyl acetate	284.2	415.7	72
	104000	110000		3-Methyl-1-butyl acetate	210.1	510.1	72
	91700	97200		Methylcyclohexane	321.8	505.9	60
	10750	11500		Methylcyclopentane	295	480	157
	104000	110000		2-Methyl-1-propyl acetate	210.4	468.5	72
		48000		Nitroethane	303.1		151
		4800		Octadecane	403.55		154
	3700	4000		1-Octadecanol	390.55		154
	4530	4800		Octane	353	527	112
	3700	4000		1-Octanol	372.35		154
			62600	1-Octene	355.15		2
		4800		Pentadecane	385.25		154
		1100		Pentane	292		137
	3700	4000		1-Pentanol	375.05		154
	219800	233000		Pentyl acetate		519	181
		100000		1-Phenyldecane	283.60		105
	5500	5770		2-Propanone	251	452	157
	12750	13500		Propionitrile	312		187
	104000	110000		Propyl acetate	183.7	469.0	72
	104000	110000		2-Propyl acetate	220.9	414.2	72

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
	3700	4000		1-Tetradecanol	383.25		154
	34900	37000		Toluene		567.2	60
			62600	Vinyl acetate	384.15		2
Polystyrene (three-arm star)							
		230000		Cyclohexane	297.1	496.8	93
Polystyrene (four-arm star)							
		155000		Cyclohexane	294.13		199
Poly(trimethylene oxide)							
		infinite		Cyclohexane	300		79
Poly(vinyl alcohol)							
		40000		Water		514	45
Poly(*N*-vinyl caprolactam)							
		150000		Water		306.45	217
Poly(vinyl chloride)							
	55000			Dibutyl phthalate	353		114
	55000			Tricresyl phosphate	383		114
			85000	Dimethyl phthalate	355		219
Poly(*N*-vinylisobutyramide)							
	66000	105600		Water		313.25	208
Poly(vinyl methyl ether)							
	46500	98600		Deuterium oxide		307.2	173
	83000	155000		Water		306.95	146
Poly(*N*-vinyl-*N*-propylacetamide)							
			30000	Water		313.5	176
Styrene/acrylonitrile copolymer							
(21.1 wt% acrylonitrile)	infinite			Toluene	325.4		52
(23.2 wt% Acrylonitrile)	infinite			Toluene	355.1		52
(25.0 wt% Acrylonitrile)	90000	147000		Toluene	313.15		198
(51.0 wt% Acrylonitrile)		347000		Ethyl acetate		344.15	107
Styrene/methyl methacrylate copolymer (52.0 mol% Styrene)							
		infinite		Cyclohexanol	334.65		38
Styrene/α-methylstyrene copolymer (20.0 mol% Styrene)							
	100000	114000		Butyl acetate	288.85	453.05	181
	100000	114000		Cyclohexane	285.85	484.85	181
	100000	114000		Cyclopentane	290.95	421.05	181
	100000	114000		*trans*-Decahydronaphthalene	264.15		181
	100000	114000		Hexyl acetate	288.55	514.15	181
	100000	114000		Pentyl acetate	303.15	480.65	181
Trifluoronitrosomethane/ tetrafluoroethylene copolymer (1:1) alternating							
	infinite			1,1,2-Trichloro-1,2,2-trifluoroethane	301.6		12
N-Vinylacetamide/vinyl acetate copolymer							
(58 mol% Vinyl acetate)	30000	57000		Water		340.15	225
(63 mol% Vinyl acetate)	27000	48600		Water		323.15	225
(78 mol% Vinyl acetate)	26000	46800		Water		282.15	225
Vinyl alcohol/vinyl butyrate copolymer							
(7.5 mol% Butyralized PVA)	infinite			Water	408.0	298.25	121

Polymer	M_n/g mol^{-1}	M_w/g mol^{-1}	M_η/g mol^{-1}	Solvent	UCST/K	LCST/K	Ref
N-Vinylcaprolactam/*N*-vinylamine copolymer (3.8 mol% Vinyl amine)							
			160000	Water		308.8	176
N-Vinylformamide/vinyl acetate copolymer							
(60 mol% Vinyl acetate)	24000	45600		Water		310.15	225
(66 mol% Vinyl acetate)	25000	47500		Water		291.15	225
(73 mol% Vinyl acetate)	23000	50600		Water		277.15	225

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