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TABLE 6. *cont'd*

Formulae	Solvents	Amorphous polymers
	$\delta_p = \delta_t \left(\frac{1}{\alpha} \frac{F_p}{F_t + B} \right)^{1/2}$	$\delta_p = \delta_t \left(\frac{1}{\alpha^{(P)}} \frac{F_p}{F_t + B/\bar{n}} \right)^{1/2}$
	$\delta_h = \delta_t \left(\frac{\alpha - 1}{\alpha} \right)^{1/2}$	$\delta_h = \delta_t \left(\frac{\alpha^{(P)} - 1}{\alpha^{(P)}} \right)^{1/2}$
	$\delta_d = (\delta_t^2 - \delta_p^2 - \delta_h^2)^{1/2}$	$\delta_d = (\delta_t^2 - \delta_p^2 - \delta_h^2)^{1/2}$

[a] In the equations given here, F_t is always combined with a Base value, α is the molecular aggregation number, and $\bar{n}$ the number of repeating units per polymer chain segment.

D. SOLUBILITY PARAMETER TABLES

TABLE 7. SOLUBILITY PARAMETERS OF SOLVENTS IN ALPHABETICAL ORDER

Solvent	CAS number	Solubility parameter δ		H-bonding group
		$(MPa^{1/2})$	$(cal/cm)^{1/2}$	
Acetaldehyde 乙醛	75-07-0	21.1	10.3	m
Acetic acid 乙酸	64-19-7	20.7	10.2	s
Acetic anhydride 乙酸酐	108-24-7	21.1	10.3	s
Acetone 丙酮	67-64-1	20.3	9.9	m
Acetonitrile 乙腈	75-07-8	24.3	11.9	p
Acetophenone 苯乙酮	98-86-2	21.7	10.6	m
Acetyl chloride 乙酰氯	75-36-5	19.4	9.5	m
Acetylmorpholine (*N*)	1696-20-4	23.7	11.6	m
Acetylpiperidine (*N*)	618-42-8	22.9	11.2	s
Acetylpyrrolidine (*N*)	1072-83-9	23.3	11.4	s
Acrolein 丙烯醛	107-02-8	20.1	9.8	s
Acrylic acid 丙烯酸	79-10-7	24.6	12.0	s
Acrylonitrile 丙烯腈	107-13-1	21.5	10.5	p
Allyl acetate 乙酸烯丙酯	591-87-7	18.8	9.2	m
Allyl alcohol 丙烯醇	107-18-6	24.1	11.8	s
Allyl chloride 3-氯丙稀	107-05-1	18.0	8.8	m
Ammonia 氨	7664-41-7	33.4	16.3	s
Amyl acetate (iso)	625-16-1	16.0	7.8	m
(normal) 乙酸正戊酯	628-63-7	17.4	8.5	m
(secondary) 乙酸异戊酯	626-38-0	17.0	8.3	m
Amyl alcohol	75-85-4	20.5	10.0	s
Amyl alcohol (normal)	71-41-0	22.3	10.9	s
Amylamine (normal)	110-58-7	17.8	8.7	s
Amyl bromide (1-bromopentane)	110-53-2	15.6	7.6	m
Amyl chloride (1-chloropentane)	543-59-9	17.0	8.3	m
Amylene (2-methyl-2-butene)	513-35-9	14.1	6.9	p
Amyl ether (pentyl ether)	693-65-2	14.9	7.3	m
Amyl formate (iso)	110-45-2	16.4	8.0	m
(normal)	638-49-3	17.2	8.5	m
Amyl iodide (1-iodopentane)	628-17-1	17.2	8.4	m
Anethole (*para*)	4180-23-8	17.2	8.4	m
Aniline	65-53-3	21.1	10.3	s
Anthracene	120-12-7	20.3	9.9	p
Apco #18 solvent		15.3	7.5	p
Apco #140 solvent		14.9	7.3	p
Apco thinner		16.0	7.8	p
Aroclor 1248	12672-29-6	18.0	8.8	p
Benzaldehyde	100-52-7	19.2	9.4	m
Benzene 苯	71-43-2	18.8	9.2	p
Benzonitrile	100-47-0	17.2	8.4	p
Benzyl alcohol 苯甲醇	100-51-6	24.8	12.1	s
Bicyclohexyl	92-51-3	17.4	08.5	p
Bromobenzene	108-86-1	20.3	09.9	p
1-Bromonaphthalene	90-11-9	21.7	10.6	p
Bromostyrene (*ortho*)	2039-88-5	20.1	9.8	p
1,3-Butadiene	106-99-0	14.5	7.1	p

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TABLE 7. *cont'd*

Solvent	CAS number	Solubility parameter δ (MPa$^{1/2}$)	Solubility parameter δ (cal/cm)$^{1/2}$	H-bonding group
n-Butane	106-97-8	13.9	6.8	p
1,3-Butanediol	107-88-0	23.7	11.6	s
1,4-Butanediol	110-63-4	24.8	12.1	s
2,3-Butanediol	513-85-9	22.7	11.1	s
Butyl acetate (iso)	540-88-5	17.0	8.3	m
n-Butyl acetate	123-86-4	17.4	8.5	m
sec-Butyl acetate	105-46-4	16.8	8.2	m
Butyl acrylate (iso)	1663-39-4	17.4	8.5	m
n-Butyl acrylate	141-32-2	18.0	8.8	m
Butyl alcohol (iso) (2-methyl-1-propanol)	78-83-1	21.5	10.5	s
n-Butyl alcohol (1-butanol)	71-36-3	23.3	11.4	s
sec-Butyl alcohol (2-butanol)	15892-23-6	22.1	10.8	s
tert-Butyl alcohol (2-methyl-2-propanol)	75-65-0	21.7	10.6	s
n-Butylamine	109-73-9	17.8	8.7	s
n-Butyl bromide (1-bromobutane)	109-65-9	17.8	8.7	m
sec-Butyl bromide (2-bromobutane)	78-76-2	17.2	8.4	m
Butyl (iso) butyrate (normal)	539-90-2	16.0	7.8	m
Butyl (normal) butyrate (normal)	109-21-7	16.6	8.1	m
Butyl chloride (iso) (2-chloro-2-methylpropane)	507-20-0	16.6	8.1	m
Butylene-2,3 carbonate	4437-85-9	24.8	12.1	m
Butylene (iso) (2-methylpropene)	115-11-7	13.7	6.7	p
Butyl ether	142-96-1	16.0	7.8	m
Butyl formate (iso)	762-75-4	16.8	8.2	m
(normal)	592-84-7	18.2	8.9	m
Butyl iodide (normal) (1-iodobutane)	542-69-8	17.6	8.6	m
Butyl lactate (normal)	138-22-7	19.2	9.4	m
Butyl methacrylate	97-88-1	16.8	8.2	m
Butyl propionate	590-01-2	18.0	8.8	m
Butyl stearate	123-95-5	15.3	7.5	m
Butyraldehyde	123-72-8	18.4	9.0	m
Butyric acid (iso) (2-methylpropionic acid)	79-31-2	21.1	10.3	s
(normal)	107-92-6	21.5	10.5	s
Butyrolactone, γ γ-丁内酯	96-48-0	25.8	12.6	m
Butyronitrile (iso)	78-82-0	20.1	9.8	p
(normal)	109-74-0	21.5	10.5	p
Caprolactam, ε	105-60-2	26.0	12.7	m
Caprolactone, ε	502-44-3	20.7	10.1	m
Capronitrile (heptyl cyanide)	124-12-9	19.2	9.4	p
Carbon disulfide	75-15-0	20.5	10.0	p
Carbon tetrachloride	56-23-5	17.6	8.6	p
Celanese solvent 601		18.8	9.2	m
Chloroacetonitrile	920-37-6	25.8	12.6	p
Chlorobenzene	108-90-7	19.4	9.5	p
Chloroethyl acetate (β)	542-58-5	19.8	9.7	m
Chloroform	67-66-3	19.0	9.3	p
Chlorostyrene (*ortho* or *para*)	2039-87-4	19.4	9.5	p
Chlorotoluene (*para*)	106-43-4	18.0	8.8	p
Cresol (meta)	108-39-4	20.9	10.2	s
Cyclobutanedione	14406-53-3	22.5	11.0	m
Cyclohexane	110-82-7	16.8	8.2	p
Cyclohexanol	108-93-0	23.3	11.4	s
Cyclohexanone 环己酮	108-94-1	20.3	9.9	m
Cyclopentane	287-92-3	17.8	8.7	p
Cyclopentanone	120-92-3	21.3	10.4	m
Cymene (*para*) (2-isopropyl toluene)	99-87-6	16.8	8.2	p
Decahydronaphthalene (*cis* and *trans*) (Decalin)	91-17-8	18.0	8.8	p
Decane (normal)	124-18-5	13.5	6.6	p
Decyl acrylate (iso)	2156-96-9	16.8	8.2	m
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	123-42-2	18.8	9.2	m
Diacetone alcohol methyl ether (Pentoxone)	107-70-0	16.8	8.2	m
Diacetylpiperazine (*N,N*)	18940-57-3	28.0	13.7	m
Diamyl phthalate	131-18-0	18.6	9.1	m
Dibenzyl ether	103-50-4	19.2	9.4	m

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TABLE 7. *cont'd*

Solvent	CAS number	Solubility parameter δ		H-bonding group
		$(MPa^{1/2})$	$(cal/cm)^{1/2}$	
Dibromoethane-1,2	106-93-4	21.3	10.4	p
Dibromoethylene-1,2 (*cis* and *trans*)	540-49-8	20.7	10.1	p
Dibutoxyethyl phthalate (Kronisol)	117-83-9	16.4	8.0	m
Dibutylamine	111-92-2	16.6	8.1	s
Dibutyl fumarate	105-75-9	18.4	9.0	m
Dibutyl maleate	105-76-0	18.4	9.0	m
Dibutyl phenyl phosphate	2528-36-1	17.8	8.7	m
Dibutyl phthalate	84-74-2	19.0	9.3	m
Dibutyl sebacate	109-43-3	18.0	9.2	m
Dichloroacetic acid	79-43-6	22.5	11.0	s
Dichlorobenzene (*ortho*)	95-50-1	20.5	10.0	p
Dichlorodifluoromethane (Freon 12)	75-71-8	11.3	5.5	p
Dichloroethyl ether	623-46-1	20.1	9.8	m
Dichloroethylene, *cis*-1,2	156-59-2	18.6	9.1	p
trans-1,2	156-60-5	18.4	9.0	p
Dichlorofluoromethane (Freon 21)	75-43-4	17.0	8.3	p
Dichloropropane-1,2	78-87-5	18.4	9.0	p
Dichloropropane-2,2	594-20-7	16.8	8.2	p
Diethylacetamide (*N,N*)	685-91-6	20.3	9.9	m
Diethylamine	109-89-7	16.4	8.0	s
Diethyl carbonate	105-58-8	18.0	8.8	m
Diethylene glycol	111-46-6	24.8	12.1	s
Diethylene glycol monobutyl ether (normal)	112-34-5	19.4	9.5	m
Diethylene glycol monobutyl ether	112-34-5	20.9	10.2	m
Diethylene glycol monobutyl ether acetate	124-17-4	17.4	8.5	m
Diethylene glycol monolaurate	141-20-8	17.8	8.7	m
Diethyl ether	60-29-7	15.1	7.4	m
Diethylformamide (*N,N*)	617-84-5	21.7	10.6	m
Diethyl ketone	96-22-0	18.0	8.8	m
Diethyl maleate	141-05-9	20.3	9.9	m
Diethyl oxalate	95-92-1	17.6	8.6	m
Diethyl phthalate	84-66-2	20.5	10.0	m
Diethyl-2,2-propanediol-1,2 (heptylene glycol)	115-76-4	20.3	9.9	s
Diethyl sulfone	597-35-3	25.4	12.4	m
Difluorotetrachloroethane (Freon 112)	76-11-9	16.0	7.8	p
Diformylpiperazine (*N,N*)	4164-39-0	31.5	15.4	m
Dihexyl ether	112-58-3	16.4	8.0	m
Di-*n*-hexyl phthalate	108-83-8	18.2	8.9	m
Diisobutylene	107-39-1	15.8	7.7	p
Diisobutyl ketone	108-83-8	16.0	7.8	m
Diisodecyl phthalate	26761-40-0	14.7	7.2	m
Diisopropyl ether	108-20-3	14.1	6.9	m
Diisopropyl ketone	565-80-0	16.4	8.0	m
Dimethylacetamide (*N,N*) N,N-二甲基乙酰胺	127-19-5	22.1	10.8	m
Dimethylaniline	121-69-7	19.8	9.7	m
Dimethyl-2,2-butanediol-1,2 (isobutylene glycol)	558-43-0	22.9	11.2	s
Dimethyl-2,2-butanediol-1,3	76-09-3	20.5	10.0	s
Dimethyl carbonate 碳酸二甲酯	616-38-6	20.3	9.9	m
Dimethyl ether 二甲醚	115-10-6	18.0	8.8	m
Dimethylformamide (*N,N*) **N,N-**二甲基甲酰胺	68-12-2	24.8	12.1	m
Dimethyl malonate 丙二酸二甲酯	108-59-8	22.5	11.0	m
Dimethylnitroamine (*N,N*) **N-**亚硝基二甲胺	62-75-9	26.8	13.1	s
Dimethyl oxalate 草酸二甲酯	553-90-2	22.5	11.0	m
Dimethyl phosphite 亚磷酸二甲酯	868-85-9	25.6	12.5	m
Dimethyl phthalate 邻苯二甲酸二甲酯	131-11-3	21.9	10.7	m
Dimethyl siloxane 聚二甲基硅氧烷	9016-00-6	10.0–12.1	4.9–5.9	p
Dimethyl sulfide 二甲基硫醚	75-18-3	19.2	9.4	p
Dimethyl sulfoxide 二甲基亚砜	67-68-5	29.7	14.5	m
Dimethyltetramethylene sulfone	1003-78-7	24.6	12.0	m
Dioctyl adipate	103-23-1	17.8	8.7	m
Dioctyl phthalate	117-81-7	24.8	12.1	m
Dioctyl sebacate	1222-62-3	17.8	8.7	m
Dioxane-1,4 **1，4-**二氧六环	123-91-1	20.5	10.0	m

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TABLE 7. *cont'd*

Solvent	CAS number	Solubility parameter δ (MPa $^{1/2}$)	Solubility parameter δ (cal/cm) $^{1/2}$	H-bonding group
Dioxolane-1,3	646-06-0	17.6	8.6	m
Dipentene	138-86-3	20.5	10.0	m
Diphenyl ether	101-84-8	20.9	10.2	m
Diphenyl 2-ethylhexyl phosphate	1241-94-7	17.4	8.5	p
Dipropylene glycol	110-98-5	20.7	10.1	m
Dipropylene glycol monomethyl ether	34590-94-8	17.6	8.6	m
Dipropyl phthalate	131-16-8	20.5	10.0	s
Dipropyl sulfone	598-03-8	23.1	11.3	m
Dodecane	112-40-3	16.2	7.9	p
Dodecanol-1	112-53-8	20–21	9.8	s
Epichlorohydrin	106-89-8	22.5	11.0	s
Ethane	74-84-0	12.3	6.0	p
Ethylacetamide (*N*)	625-50-3	25.2	12.3	s
Ethyl acetate 乙酸乙酯	141-78-6	18.6	9.1	m
Ethyl acrylate	140-88-5	17.6	8.6	m
Ethyl alcohol 乙醇	64-17-5	26.0	12.7	s
Ethylamine	75-04-7	20.5	10.0	s
Ethyl amyl ketone (3-octanone)	106-68-3	16.8	8.2	m
Ethylbenzene	100-41-4	18.0	8.8	p
Ethyl benzoate	93-89-0	16.8	8.2	m
Ethyl bromide (bromoethane)	74-96-4	19.6	9.6	m
Ethyl-2-butanol-1	97-95-0	21.5	10.5	s
Ethyl *n*-butyrate	105-54-4	17.4	8.5	m
Ethyl caprylate	106-32-1	14.9	7.3	m
Ethyl chloride	75-00-3	18.8	9.2	m
Ethyl cyanoacetate	105-56-6	22.5	11.0	m
Ethylene bromide	593-60-2	19.8	9.7	p
Ethylene carbonate	96-49-1	30.1	14.7	m
Ethylene chlorohydrin (2-chloroethanol)	107-07-3	25.0	12.2	s
Ethylene cyanohydrin (3-hydroxypropionitrile)	109-78-4	31.1	15.2	s
Ethylenediamine	107-15-3	25.2	12.3	s
Ethylene dichloride (1,2-dichloroethane)	107-06-2	20.1	9.8	p
Ethylene glycol	107-21-1	29.9	14.6	s
Ethylene glycol diacetate	111-55-7	20.5	10.0	m
Ethylene glycol diethyl ether	629-14-1	17.0	8.3	m
Ethylene glycol dimethyl ether	110-71-4	17.6	8.6	m
Ethylene glycol methyl ether acetate	110-49-6	18.8	9.2	m
Ethylene glycol monobenzyl ether	622-08-2	22.3	10.9	m
Ethylene glycol monobutyl ether	111-76-2	19.4	9.5	m
Ethylene glycol monoethyl ether (2-ethoxyethanol; Cellusolve)	110-80-5	21.5	10.5	m
Ethylene glycol monomethyl ether (2-methoxyethanol)	109-86-4	23.3	11.4	m
Ethylene glycol monophenyl ether	122-99-6	23.5	11.5	m
Ethylene oxide	75-21-8	22.7	11.1	m
Ethylene formamide (*N*)		28.4	13.9	s
Ethyl formate	109-94-4	19.2	9.4	m
Ethyl-2-hexanediol-1,3 (octylene glycol)	94-96-2	19.2	9.4	s
Ethylhexanol	104-76-7	19.4	9.5	s
Ethyl hexyl acrylate	103-11-7	16.0	7.8	m
Ethylidene chloride	75-34-3	18.2	8.9	p
Ethyl iodide (iodoethane)	75-03-6	19.2	9.4	m
Ethyl isobutyl ether	627-02-1	15.3	7.5	m
Ethyl isobutyrate	97-62-1	16.2	7.9	m
Ethyl lactate	687-47-8	20.5	10.0	m
Ethyl mercaptan (ethane thiol)	75-08-1	18.8	9.2	p
Ethyl methacrylate	97-63-2	17.0	8.3	m
Ethyl morpholine (*N*)	100-74-3	18.2	8.9	s
Ethyl orthoformate (triethyl orthoformate)	122-51-0	17.0	8.3	m
Ethyl propionate	105-37-3	17.2	8.4	m
Fluorocarbons, aliphatic		11.3–12.7	5.5–6.2	p
aromatic		15.3–16.8	7.5–8.2	p
Formamide	75-12-7	39.3	19.2	s
Formic acid 甲酸	64-18-6	24.8	12.1	s

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TABLE 7. *cont'd*

Solvent	CAS number	Solubility parameter δ MPa$^{1/2}$	Solubility parameter δ (cal/cm)$^{1/2}$	H-Bonding Group
Formylmorpholine (*N*)	4394-85-8	26.6	13.0	m
Formylpiperidine (*N*)	2591-86-8	23.5	11.5	m
Furan	110-00-9	19.2	9.4	m
Furfural (2-furaldehyde)	98-01-1	22.9	11.2	m
Furfuryl alcohol	98-00-0	25.6	12.5	s
Glycerol	56-81-5	33.8	16.5	s
Heptane (normal)	142-82-5	15.1	7.4	p
Heptyl alcohol (normal)	111-70-6	21.7	10.6	s
Hexamethylphosphoramide	680-31-9	21.5	10.5	s
Hexane (normal)	110-54-3	14.9	7.3	p
Hexanediol-2,5	2935-44-6	21.2	10.3	s
Hexene-1	592-41-6	15.1	7.4	p
Hexyl alcohol (normal)	111-27-3	21.9	10.7	s
Hydrazine	302-10-2	37.3	18.1	s
Hydrogen	1333-74-0	6.9	3.0	p
Hydrogenated terphenyl (Monsanto HB-40)		18.4	9.0	p
Hydrogen cyanide	74-90-8	24.8	12.1	s
Iodobenzene	591-50-4	20.7	10.1	p
Isophorone 异佛尔酮	78-59-1	18.6	9.1	m
Isoprene	78-79-5	15.1	7.4	p
Lauryl alcohol	112-53-8	16.6	8.1	s
Low odor mineral spirits		14.1	6.9	p
Maleic anhydride	108-31-6	27.8	13.6	s
Malononitrile	109-77-3	30.9	15.1	p
Mesitylene	108-67-8	18.0	8.8	p
Mesityl oxide	141-79-7	18.4	9.0	m
Methacrylic acid	79-41-4	22.9	11.2	s
Methane	74-82-8	11.0	5.4	p
Methanol 甲醇	67-56-1	29.7	14.5	s
Methoxy-4-methyl-4-pentanol-2		17.4	8.5	s
Methoxy-4-methyl-4-pentanone-2	107-70-0	17.0	8.3	m
Methylacetamide	79-16-3	29.9	14.6	s
Methyl acetate 乙酸甲酯	79-20-9	19.6	9.6	m
Methyl acrylate	96-33-3	18.2	8.9	m
Methylamine	74-89-5	22.9	11.2	s
Methyl amyl acetate	108-84-9	16.4	8.0	m
Methyl amyl ketone	110-43-0	17.4	8.5	m
Methyl benzoate	95-58-3	21.5	10.5	m
Methyl bromide	74-83-9	19.6	9.6	m
Methyl *n*-butyl ketone	591-78-6	17.0	8.3	m
Methyl *n*-butyrate	623-42-7	18.2	8.9	m
Methyl caprolactone		18.2	8.9	m
Methyl chloride	74-87-3	19.8	9.7	m
Methylcyclohexane	10120-28-2	16.0	7.8	p
Methylcyclohexanone	589-92-4	19.0	9.3	m
Methylene chloride 二氯甲烷	75-09-2	19.8	9.7	p
Methylene glycolate	61192-32-3	25.4	12.4	m
Methylene iodide	75-11-6	24.1	11.8	p
Methyl ethyl ketone 丁酮	78-93-3	19.0	9.3	m
Methyl ethyl sulfone	594-43-4	27.4	13.4	m
Methylformamide (*N*)	123-39-7	32.9	16.1	s
Methyl formate	107-31-3	20.9	10.2	m
Methyl *n*-hexyl ketone	111-13-7	17.0	8.3	m
Methyl iodide	74-88-4	20.9	10.2	m
Methyl isoamyl ketone	110-12-3	17.2	8.4	m
Methyl isobutyl carbinol	108-11-2	20.5	10.0	s
Methyl isobutyl ketone	108-10-1	17.2	8.4	m
Methyl isobutyrate	547-63-7	17.0	8.3	m
Methyl isopropyl ketone	563-80-4	17.4	8.5	m
Methyl isovalerate	624-24-8	16.2	7.9	m
Methyl methacrylate	80-62-6	18.0	8.8	m
Methyl nonyl ketone	112-12-9	16.0	7.8	m
Methyl-2-pentanediol-1,3	149-31-5	21.1	10.3	s

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TABLE 7. *cont'd*

Solvent	CAS number	Solubility parameter δ (MPa$^{1/2}$)	Solubility parameter δ (cal/cm)$^{1/2}$	H-bonding group
Methyl-2-pentanediol-2,4	107-41-5	19.8	9.7	s
Methyl-2-pentanediol monoethyl ether (Pentoxol)		17.4	8.5	m
Methyl propionate	554-12-1	18.2	8.9	m
Methyl propyl ketone	107-87-9	17.8	8.7	m
Methyl propyl sulfone	1977-37-3	25.6	12.5	m
Methyl pyrrolidone-2 (1-methyl-2-pyrrolidinone)	872-50-4	23.1	11.3	m
Methyl salicylate	119-36-8	21.7	10.6	m
Methyl styrene (α)	98-83-9	17.4	8.5	p
Methyltetramethylene sulfone		26.4	12.9	m
Methyl *n*-valerate	624-24-8	16.2	7.9	m
Morpholine	110-91-8	22.1	10.8	s
Naphthalene	91-20-3	20.3	9.9	p
Neopentane	463-82-1	12.9	6.3	p
Neopentyl glycol	126-30-7	22.5	11.0	s
Nitrobenzene	98-95-3	20.5	10.0	p
Nitroethane	79-24-3	22.7	11.1	p
Nitromethane	75-52-5	26.0	12.7	p
Nitro-*n*-octane		14.3	7.0	p
Nitro-1-propane	108-03-2	21.1	10.3	p
Nitro-2-propane	79-46-9	20.3	9.9	p
Nonyl phenol	25154-52-3	19.2	9.4	s
Octane (normal)	111-65-9	15.6	7.6	p
Octyl alcohol (normal)	111-87-5	21.1	10.3	s
Pentachloroethane	76-01-7	19.2	9.4	p
Pentane (normal)	109-66-0	14.3	7.0	p
Pentanediol-1,5	111-29-5	23.5	11.5	s
Pentanediol-2,4	625-69-4	22.1	10.8	s
Perchloroethylene	127-18-4	19.0	9.3	p
Perfluoroheptane	335-57-9	11.9	5.8	p
Perfluoromethylcyclohexane	355-02-2	12.3	6.0	p
Phenanthrene	85-01-8	20.1	9.8	p
Phenylhydrazine	100-63-0	25.6	12.5	s
Pine oil		17.6	8.6	p
Piperidine	110-89-4	17.8	8.7	p
Piperidone	675-20-7	27.8	13.6	s
Propane	74-98-6	13.1	6.4	p
Propiolactone	57-57-8	27.2	13.3	m
Propionic acid	79-09-4	20.3	9.9	s
Propionic anhydride	123-62-6	20.5	10.0	s
Propionitrile	107-12-0	22.1	10.8	p
Propyl acetate (iso)	108-21-4	17.2	8.4	m
Propyl acetate (normal)	109-60-4	18.0	8.8	m
Propyl alcohol (2-propanol)	67-63-0	23.5	11.5	s
Propyl alcohol (1-propanol)	71-23-8	24.3	11.9	s
Propylbenzene (normal)	103-65-1	17.6	8.6	p
Propyl bromide (1-bromopropane)	106-94-5	18.2	8.9	m
Propyl butyrate	105-66-8	17.2	8.4	m
Propyl butyrate (iso)	638-11-9	16.2	7.9	m
Propyl chloride (2-chloropropane)	75-29-6	16.6	8.1	m
Propyl chloride (1-chloropropane)	540-54-5	17.4	8.5	m
Propylene-1,2-carbonate	108-32-7	27.2	13.3	m
Propylene glycol (1,2-propanediol)	57-55-6	25.8	12.6	s
Propylene glycol methyl ether (1,2-dimethoxypropane)	7778-85-0	20.7	10.1	m
Propylene oxide	75-56-9	18.8	9.2	m
Propyl ether (di-, normal)	111-43-3	16.0	7.8	m
Propyl ether (iso)	108-20-3	14.5	7.1	m
Propyl formate	110-74-7	18.8	9.2	m
Propyl propionate	106-36-5	17.4	8.5	m
Pyridine	110-86-1	21.9	10.7	s
Pyrone (γ)	504-31-4	27.4	13.4	m
Pyrrolidine (α)	123-75-1	30.1	14.7	s
Quinoline	00-02-2	22.1	10.8	s
Santicizer 8		24.3	11.9	m

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TABLE 7. *cont'd*

Solvent	CAS number	Solubility parameter δ (MPa$^{1/2}$)	Solubility parameter δ (cal/cm)$^{1/2}$	H-bonding group
Shell Sol 72		14.7	7.2	p
Shell TS28 solvent		15.1	7.4	p
Silicon tetrachloride		15.1	7.4	p
Socal solvent No. 1		16.6	8.1	p
Socal solvent No. 2		16.2	7.9	p
Socal solvent No. 3		15.8	7.7	p
Solvesso 100		17.6	8.6	p
Solvesso 150		17.4	8.5	p
Styrene	100-42-5	19.0	9.3	p
Styrene oxide	96-09-3	21.5	10.5	m
Succinic anhydride	108-30-5	31.5	15.4	s
Terpene B		17.2	8.4	p
Tetrachloroethane-1,1,2,2	79-34-5	19.8	9.7	p
Tetrachloroethylene (perchloroethylene)	127-18-4	19.0	9.3	p
Tetraethylene glycol	112-60-7	20.3	9.9	s
Tetrahydrofuran	109-99-9	18.6	9.1	m
Tetrahydronaphthalene (tetralin)	119-64-2	19.4	9.5	p
Tetramethylene sulfone (sulfolane, tetrahydrothiophene 1,1-dioxide)	126-33-0	27.4	13.4	m
Tetramethyloxamide		23.3	11.4	m
Thiophene	110-02-1	20.1	9.8	m
Toluene	108-88-3	18.2	8.9	p
Tolylene diisocyanate (4-methyl-1,3-phenylene diisocyanate)	584-84-9	23.7	11.6	s
Tributylamine	102-82-9	15.8	7.7	s
Trichloroethane-1,1,2	79-00-5	19.6	9.6	p
Trichloroethylene	79-01-6	18.8	9.2	p
Trichlorofluoromethane	75-69-4	15.5	7.6	p
Trichlorotrifluoroethane (1,1,2-trichlorotrifluoroethane)	76-13-1	14.9	7.3	p
Tricresyl phosphate (tritolyl phosphate)	1330-78-5	17.2	8.4	m
Triethylamine	121-44-8	15.1	7.4	s
Triethylene glycol	112-27-6	21.9	10.7	s
Triethylenetetramine	112-24-3	22.7	11.1	s
Trimethyl-3,5,5-hexanol (nonyl alcohol)	3452-97-9	17.2	8.4	s
Triphenyl phosphate	115-86-6	17.6	8.6	m
Triphenyl phosphite	101-02-0	19.0	9.3	m
Tripropylene glycol	24800-44-0	18.8	9.2	s
Tripropylene glycol methyl ether	20324-33-8	17.8	8.7	m
Turpentine	8006-64-2	16.6	8.1	p
Valeric acid (normal)	109-52-4	20.1	9.8	s
Valeronitrile (normal)	110-59-8	19.6	9.6	p
Varnolene (Varsol #2)		15.6	7.6	p
Vinyl acetate	108-05-4	18.4	9.0	m
Vinyl chloride	75-01-4	16.0	7.8	m
Vinyl toluene	622-97-9	18.6	9.1	p
V M & P naphtha		15.6	7.6	p
Water 水	7732-18-5	47.9	23.4	s
Xylene (*p*-xylene) 1，4-二甲苯	106-42-3	18.0	8.8	p

TABLE 8. SOLUBILITY PARAMETERS OF SOLVENTS IN INCREASING ORDER OF δ

Solvent	δ (MPa$^{1/2}$)
Hydrogen	6.9
Dimethyl siloxane	10.0–12.1
Methane	11.0
Dichlorodifluoromethane (Freon 12)	11.3
Fluorocarbons, aliphatic	11.3–12.7
Perfluoroheptane	11.9
Ethane	12.3
Perfluoromethylcyclohexane	12.3
Neopentane	12.9

TABLE 8. *cont'd*

Solvent	δ (MPa$^{1/2}$)
Propane	13.1
Decane (normal)	13.5
Butylene (iso) (2-methylpropene)	13.7
n-Butane	13.9
Amylene (2-methyl-2-butene)	14.1
Diisopropyl ether	14.1
Low odor mineral spirits	14.1
Nitro-*n*-octane	14.3
Pentane (normal)	14.3
1,3-Butadiene	14.5

TABLE 8. *cont'd*

Solvent	δ (MPa$^{1/2}$)
Propyl ether (iso)	14.5
Diisodecyl phthalate	14.7
Shell Sol 72	14.7
Amyl ether (pentyl ether)	14.9
Apco #140 solvent	14.9
Ethyl caprylate	14.9
Hexane (normal)	14.9
Trichlorotrifluoroethane (1,1,2-trichlorotrifluoroethane)	14.9
Diethyl ether	15.1
Heptane (normal)	15.1
Hexene-1	15.1
Isoprene	15.1
Shell TS28 solvent	15.1
Silicon tetrachloride	15.1
Triethylamine	15.1
Apco #18 solvent	15.3
Butyl stearate	15.3
Ethyl isobutyl ether	15.3
Fluorocarbons (aromatic)	15.3–16.8
Trichlorofluoromethane	15.5
Amyl bromide (1-bromopentane)	15.6
Octane (normal)	15.6
Varnolene (varsol #2)	15.6
V M & P naphtha	15.6
Diisobutylene	15.8
Socal solvent No. 3	15.8
Tributylamine	15.8
Amyl acetate (iso)	16.0
Apco thinner	16.0
Butyl (iso) butyrate (normal)	16.0
Butyl ether	16.0
Difluorotetrachloroethane (Freon 112)	16.0
Diisobutyl ketone	16.0
Ethyl hexyl acrylate	16.0
Methylcyclohexane	16.0
Methyl nonyl ketone	16.0
Propyl ether (di-, normal)	16.0
Vinyl chloride	16.0
Dodecane	16.2
Ethyl isobutyrate	16.2
Methyl isovalerate	16.2
Methyl *n*-valerate	16.2
Propyl butyrate (iso)	16.2
Socal solvent No. 2	16.2
Amyl formate (iso)	16.4
Dibutoxyethyl phthalate (Kronisol)	16.4
Diethylamine	16.4
Dihexyl ether	16.4
Diisopropyl ketone	16.4
Methyl amyl acetate	16.4
Butyl (normal) butyrate (normal)	16.6
Butyl chloride (iso) (2-chloro-2-methylpropane)	16.6
Dibutylamine	16.6
Lauryl alcohol	16.6
Propyl chloride (2-chloropropane)	16.6
Socal solvent No. 1	16.6
Turpentine	16.6
Butyl acetate	16.8

TABLE 8. *cont'd*

Solvent	δ (MPa$^{1/2}$)
Ethyl amyl ketone (3-octanone)	16.8
Ethyl benzoate	16.8
Ethyl benzoate (secondary)	17.0
Amyl chloride (1-chloropentane)	17.0
Butyl acetate (iso)	17.0
Dichlorofluoromethane (Freon 21)	17.0
Ethylene glycol diethyl ether	17.0
Ethyl methacrylate	17.0
Ethyl orthoformate (triethyl orthoformate)	17.0
Methoxy-4-methyl-4-pentanone-2	17.0
Methyl *n*-butyl ketone	17.0
Methyl *n*-hexyl ketone	17.0
Methyl isobutyrate	17.0
Amylformates (normal)	17.2
Methyl isobutyrate (normal)	17.2
Amyl iodide (1-iodopentane)	17.2
Anethole (*para*)	17.2
Benzonitrile	17.2
sec-Butyl bromide (2-bromobutane)	17.2
Ethyl propionate	17.2
Methyl isoamyl ketone	17.2
Methyl isobutyl ketone	17.2
Propyl acetate (iso)	17.2
Propyl butyrate	17.2
Terpene B	17.2
Tricresyl phosphate (tritolyl phosphate)	17.2
Trimethyl-3,5,5-hexanol (nonyl alcohol)	17.2
Trimethyl-3,5,5-hexanol (normal)	17.4
Bicyclohexyl	17.4
n-Butyl acetate	17.4
Butyl acrylate (iso)	17.4
Diethylene glycol monobutyl ether acetate	17.4
Diphenyl 2-ethylhexyl phosphate	17.4
Ethyl *n*-butyrate	17.4
Methoxy-4-methyl-4-pentanol-2	17.4
Methyl amyl ketone	17.4
Methyl isopropyl ketone	17.4
Methyl-2-pentanediol monoethyl ether (Pentoxol)	17.4
Methyl styrene (α)	17.4
Propyl chloride (1-chloropropane)	17.4
Propyl propionate	17.4
Solvesso 150	17.4
Butyl iodide (normal) (1-iodobutane)	17.6
Carbon tetrachloride	17.6
Diethyl oxalate	17.6
Dioxolane-1,3	17.6
Dipropylene glycol monomethyl ether	17.6
Ethyl acrylate	17.6
Ethylene glycol dimethyl ether	17.6
Pine oil	17.6
Propylbenzene (normal)	17.6
Solvesso 100	17.6
Triphenyl phosphate	17.6
Amylamine (normal)	17.8
n-Butylamine	17.8
n-Butyl bromide (1-bromobutane)	17.8
Cyclopentane	17.8
Dibutyl phenyl phosphate	17.8

Butyl propionate	18.0
Chlorotoluene (*para*)	18.0
Decahydronaphthalene (*cis* and *trans*) (decalin)	18.0
Dibutyl sebacate	18.0
Diethyl carbonate	18.0
Diethyl ketone	18.0
Dimethyl ether	18.0
Ethylbenzene	18.0
Mesitylene	18.0
Methyl methacrylate	18.0
Propyl acetate (normal)	18.0

Pentachloroethane	19.2
Acetyl chloride	19.4
Chlorobenzene	19.4
Chlorostyrene (*ortho* or *para*)	19.4
Diethylene glycol monobutyl ether (normal)	19.4
Ethylene glycol monobutyl ether	19.4
Ethylhexanol	19.4
Tetrahydronaphthalene (tetralin)	19.4
Ethyl bromide (bromoethane)	19.6
Methyl acetate	19.6
Methyl bromide	19.6

TABLE 8. *cont'd*

Solvent	δ (MPa$^{1/2}$)
Diphenyl ether	20.9
Methyl formate	20.9
Methyl iodide	20.9
Acetaldehyde	21.1
Acetic anhydride	21.1
Aniline	21.1
Butyric acid (iso) (2-methylpropionic acid)	21.1
Methyl-2-pentanediol-1,3	21.1
Nitro-1-propane	21.1
Octyl alcohol (normal)	21.1
Hexanediol-2,5	21.2
Cyclopentanone	21.3
Dibromoethane-1,2	21.3
Acrylonitrile	21.5
Butyl alcohol (iso) (2-methyl-1-propanol)	21.5
Butyric acid (normal)	21.5
Butyronitrile (normal)	21.5
Ethyl-2-butanol-1	21.5
Ethylene glycol monoethyl ether (2-ethoxyethanol; Cellusolve)	21.5
Hexamethylphosphoramide	21.5
Methyl benzoate	21.5
Styrene oxide	21.5
Acetophenone	21.7
1-Bromonaphthalene	21.7
tert-Butyl alcohol (2-methyl-2-propanol)	21.7
Diethylformamide (*N,N*)	21.7
Heptyl alcohol (normal)	21.7
Methyl salicylate	21.7
Dimethyl phthalate	21.9
Hexyl alcohol (normal)	21.9
Pyridine	21.9
Triethylene glycol	21.9
sec-Butyl alcohol (2-butanol)	22.1
Dimethylacetamide (*N,N*)	22.1
Morpholine	22.1
Pentanediol-2,4	22.1
Propionitrile	22.1
Quinoline	22.1
Quinoline (normal)	22.3
Ethylene glycol monobenzyl ether	22.3
Cyclobutanedione	22.5
Dichloroacetic acid	22.5
Dimethyl malonate	22.5
Dimethyl oxalate	22.5
Epichlorohydrin	22.5
Ethyl cyanoacetate	22.5
Neopentyl glycol	22.5
2,3-Butanediol	22.7
Ethylene oxide	22.7
Nitroethane	22.7
Triethylenetetramine	22.7
Acetylpiperidine (*N*)	22.9
Dimethyl-2,2-butanediol-1,2 (isobutylene glycol)	22.9
Furfural (2-furaldehyde)	22.9
Methacrylic acid	22.9
Methylamine	22.9
Dipropyl sulfone	23.1
Methyl pyrrolidone-2 (1-methyl-2-pyrrolidinone)	23.1
Acetylpyrrolidine (*N*)	23.3
n-Butyl alcohol (1-butanol)	23.3
Cyclohexanol	23.3
Ethylene glycol monomethyl ether (2-methoxyethanol)	23.3
Tetramethyloxamide	23.3
Ethylene glycol monophenyl ether	23.5
Formylpiperidine (normal)	23.5

TABLE 8. *cont'd*

Solvent	δ (MPa$^{1/2}$)
Pentanediol-1,5	23.5
Propyl alcohol (2-propanol)	23.5
Acetylmorpholine (*N*)	23.7
1,3-Butanediol	23.7
Tolylene diisocyanate (4-methyl-1,3-phenylene diisocyanate)	23.7
Allyl alcohol	24.1
Methylene iodide	24.1
Acetonitrile	24.3
Propyl alcohol (1-propanol)	24.3
Santicizer 8	24.3
Acrylic acid	24.6
Dimethyltetramethylene sulfone	24.6
Benzyl alcohol	24.8
1,4-Butanediol	24.8
Butylene-2,3 carbonate	24.8
Diethylene glycol	24.8
Dimethylformamide (*N,N*)	24.8
Dioctyl phthalate	24.8
Formic acid	24.8
Hydrogen cyanide	24.8
Ethylene chlorohydrin (2-chloroethanol)	25.0
Ethylacetamide (normal)	25.2
Ethylenediamine	25.2
Diethyl sulfone	25.4
Methylene glycolate	25.4
Dimethyl phosphite	25.6
Furfuryl alcohol	25.6
Methyl propyl sulfone	25.6
Phenylhydrazine	25.6
Butyrolactone (γ)	25.8
Chloroacetonitrile	25.8
Propylene glycol (1,2-propanediol)	25.8
Caprolactam (ε)	26.0
Ethyl alcohol	26.0
Nitromethane	26.0
Methyltetramethylene sulfone	26.4
Formylmorpholine (*N*)	26.6
Dimethylnitroamine (*N,N*)	26.8
Propiolactone	27.2
Propylene-1,2-carbonate	27.2
Methyl ethyl sulfone	27.4
Pyrone (γ)	27.4
Tetramethylene sulfone (sulfolane, tetrahydrothiophene 1,1-dioxide)	27.4
Maleic anhydride	27.8
Piperidone	27.8
Diacetylpiperazine (*N,N*)	28.0
Ethylene formamide (*N*)	28.4
Dimethyl sulfoxide	29.7
Methanol	29.7
Ethylene glycol	29.9
Methylacetamide	29.9
Ethylene carbonate	30.1
Pyrrolidine (α)	30.1
Malononitrile	30.9
Ethylene cyanohydrin (3-hydroxypropionitrile)	31.1
Diformylpiperazine (*N,N*)	31.5
Succinic anhydride	31.5
Methylformamide (*N*)	32.9
Ammonia	33.4
Glycerol	33.8
Hydrazine	37.3
Formamide	39.3
Water	47.9

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TABLE 9. HANSEN SOLUBILITY PARAMETERS OF LIQUIDS AT 25°C

Solvent	CAS Number	Molar volume (cm^3/mol)	Solubility parameters ($MPa^{1/2}$)			
			δ_d	δ_p	δ_h	δ
9.1. PARAFFINIC HYDROCARBONS						
n-Butane	106-97-8	101.4	14.1	0	0	14.1
n-Pentane	109-66-0	116.2	14.5	0	0	14.5
Pentane (iso)	78-78-4	117.4	13.7	0	0	13.7
n-Hexane	110-54-3	147.4	14.9	0	0	14.9
n-Heptane	142-82-5	147.4	15.3	0	0	15.3
n-Octane	111-65-9	163.5	15.6	0	0	15.6
2,2,4-Trimethylpentane	540-84-1	166.1	14.3	0	0	14.3
n-Nonane	111-84-2	179.7	15.8	0	0	15.8
n-Decane	124-18-5	195.9	15.8	0	0	15.8
n-Dodecane	112-40-3	228.6	16	0	0	16
n-Hexadecane	544-76-3	294.1	16.4	0	0	16.4
n-Eicosane	112-95-8	359.8	16.6	0	0	16.6
Cyclohexane	110-82-7	108.7	16.8	0	0.2	16.8
Methylcyclohexane	108-87-2	128.3	16	0	1	16
cis-Decahydronaphthalene	493-01-6	156.9	18.8	0	0	18.8
trans-Decahydronaphthalene	493-02-7	159.9	18.8	0	0	18.8
9.2. AROMATIC HYDROCARBONS						
Benzene	71-43-2	89.4	18.4	0 [a]	2	18.6
Toluene	108-88-3	106.8	18	1.4	2	18.2
Naphthalene [b]	91-20-3	111.5	19	2	5.9	20
Styrene	1-42-5	115.6	18.6	1	4.1	19
o-Xylene 1，2-二甲苯	95-47-6	121.2	17.8	1	3.1	18
Ethylbenzene	1-41-4	123.1	17.8	0.6	1.4	17.8
1-Methylnaphthalene	90-12-0	138.8	20.6	0.8	4.7	21.2
Mesitylene	108-67-8	139.8	18	0	0.6	18
Tetrahydronaphthalene	119-64-2	136.0 [a]	19.6 [a]	0	2.9	20
Biphenyl	92-52-4	154.1	21.5	1	2	21.7
p-Diethylbenzene	105-05-5	156.9	18	0	0.6	18
9.3. HALOHYDROCARBONS						
Methyl chloride	74-87-3	55.4	15.3	6.1	3.9	17
Methylene dichloride	75-09-2	63.9	18.2	6.3	6.1	20.3
Bromochloromethane	74-97-5	65	17.4	5.7	3.5	18.6
Chlorodifluoromethane	75-45-6	72.9	12.3	6.3	5.7	14.9
Dichlorofluoromethane	75-43-4	75.4	15.8	3	5.7	17
Ethyl bromide	74-96-4	76.9	16.6	8	5.1	19
1,1-Dichloroethylene	75-35-4	79	17	6.8	4.5	18.8
Ethylene dichloride	107-06-2	79.4	19.0 [a]	7.4	4.1	20.9
Methylene diiodide [c]	75-11-6	80.5	17.8	3.9	5.5	19
Chloroform	67-66-3	80.7	17.8	3.1	5.7	19
1,1-Dichloroethane	75-34-3	84.8	16.6	8.2	0.4	18.4
Ethylene dibromide	106-93-4	87	19.6	6.8	12.1	23.9
Bromoform	75-25-2	87.5	21.5 [a]	4.1	6.1 [a]	22.7
n-Propyl chloride	540-54-5	88.1	16	7.8	2	17.8
Trichloroethylene	79-01-6	90.2	18	3.1	5.3	19
Dichlorodifluoromethane	75-71-8	92.3	12.3	2	0	12.5
Trichlorofluoromethane	75-69-4	92.8	15.3	2	0	15.5
Bromotrifluoromethane	75-63-8	97	9.6	2.5	0	10
Carbon tetrachloride	56-23-5	97.1	17.8	0	0.6	17.8
1,1,1-Trichloroethane	71-55-6	1.4	17	4.3	2	17.6
Tetrachloroethylene	127-18-4	101.1	19	6.5 [a]	2.9 [a]	20.3
Chlorobenzene	108-90-7	102.1	19	4.3	2	19.6
n-Butylchloride	109-69-3	104.9	16.4	5.5	2	17.4
1,1,2,2-Tetrachloroethane	79-34-5	105.2 [a]	18.8	5.1	9.4	21.7
Bromobenzene	222-22-2	105.3	20.5	5.5	4.1	21.7
o-Dichlorobenzene	95-50-1	112.8	19.2	6.3	3.3	20.5
Benzyl chloride	100-44-7	115	18.8 [a]	7.2	2.7	20.3
1,1,2,2-Tetrabromoethane [c]	79-27-6	116.8	22.7	5.1	8.2	24.8
1,2-Dichlorotetrafluoroethane [c]	76-14-2	117	12.7	1.8	0	12.9
1,1,2-Trichlorotrifluoroethane	76-13-1	119.2	14.7	1.6	0	14.7
Cyclohexyl chloride	542-18-7	121.3	17.4	5.5	2	18.4

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TABLE 9. *cont'd*

Solvent	CAS Number	Molar volume (cm^3/mol)	Solubility parameters ($MPa^{1/2}$)			
			δ_d	δ_p	δ_h	δ
1-Bromonaphthalene	90-11-9	140	20.3	3.1	4.1	20.9
Trichlorobiphenyl[d]	7012-37-5	187	19.2	5.3	4.1	20.5
Perfluoromethylcyclohexane	355-02-2	196	12.5	0	0	12.5
Perfluorodimethylcyclohexane	335-27-3	217.4	12.5	0	0	12.5
Perfluoro-*n*-heptane	335-57-9	227.3	12.1	0	0	12.5
9.4. ETHERS						
Furan	110-00-9	72.5	17.8	1.8	5.3	18.6
Epichlorohydrin	106-89-8	79.9	19	10.2	3.7	21.9
Tetrahydrofuran	109-99-9	81.7	16.8	5.7	8	19.4
1,4-Dioxane	123-91-1	85.7	19	1.8	7.4	20.5
Methylal (dimethoxymethane)	109-87-5	88.8	15.1	1.8	8.6	17.6
Diethyl ether	60-29-7	104.8	14.5	2.9	5.1	15.8
Bis(2-chloroethyl) ether	107-30-2	117.6	18.8	9	5.7	21.7
Anisolec	100-66-3	119.1	17.8	4.1	6.8	19.4
Bis-(2-methoxyethyl) ether	111-96-6	142	15.8	6.1	9.2	19.2
Dibenzyl ether[c]	103-50-4	192.7	17.4	3.7	7.4	19.2
Di-(chloro-iso-propyl) ether	108-60-1	146	19	8.2	5.1	21.3
Bis-(*m*-phenoxyphenyl) ether	748-30-1	373	19.6	3.1	5.1	20.5
9.5. KETONES						
Acetone	67-64-1	74	15.5	10.4	7	20.1
Methyl ethyl ketone (2-butanone)	78-93-3	90.1	16	9	5.1	19
Cyclohexanone	108-94-1	104	17.8	6.3	5.1	19.6
Diethyl ketone (3-pentanone)	96-22-0	106.4	15.8	7.6	4.7	18.2
Mestiyl oxide (4-methyl-3-pentene-2-one)	141-79-7	115.6	16.4	7.2	6.1	18.8
Acetophenone	98-86-2	117.4	19.6[a]	8.6	3.7	21.7
Methyl iso-butyl ketone (2-hexanone)	591-78-6	125.8	15.3	6.1	4.1	17
Methyl iso-amyl ketone		142.8	16	5.7	4.1	17.4
Isophorone	78-59-1	150.5	16.6	8.2	7.4	19.8
Di-iso-butyl ketone (2,6-dimethyl-4-heptanone)	108-83-8	177.1	16	3.7	4.1	16.8
9.6. ALDEHYDES						
Acetaldehyde	75-07-0	57.1	14.7	8	11.3	20.3
2-Furfuraldehyde (furfural)	98-01-1	83.2	18.6	14.9	5.1	24.3
Butyraldehyde	123-72-8	88.5	14.7	5.3	7	17.2
Benzaldehyde	100-52-7	101.5	19.4	7.4	5.3	21.5
9.7. ESTERS						
Ethylene carbonate (1,3-dioxolan-2-one)	96-41-9	66	19.4	21.7	5.1	29.5
γ-Butyrolactone (4-hydroxybutryic acid γ-lactone)	96-48-0	76.8	19	16.6	7.4	26.2
Methyl acetate	79-20-9	79.7	15.5	7.2	7.6	18.8
Ethyl formate	109-94-4	80.2	15.5	8.4	8.4	19.6
Propylene carbonate (1,2-propanediol cyclic carbonate)	108-32-7	85	20.1	18	4.1	27.2
Ethyl chloroformate	541-41-3	95.6	15.5	10	6.8	19.6
Ethyl acetate	141-78-6	98.5	15.8[a]	5.3	7.2[a]	18.2
Trimethyl phosphate	512-56-1	99.9	16.8	16	10.2	25.4
Diethyl carbonate	105-58-8	121	16.6	3.1	6.1	18
Diethyl sulfate	64-67-5	131.5	15.8	14.7	7.2	22.7
n-Butyl acetate	123-86-4	132.5	15.8	3.7	6.3	17.4
Iso-butyl acetate	540-88-5	133.5	15.1	3.7	6.3	16.8
2-Ethoxyethyl acetate (Cellusolve acetate)	111-15-9	136.2	16	4.7	10.6	19.6
Iso-amyl acetate 乙酸戊酯	628-63-7	148.8	15.3	3.1	7	17.2
Iso-butyl iso-butyrate	109-21-7	163	15.1	2.9	5.9	16.6
Dimethyl phthalate	131-11-3	163	18.6[a]	10.8[a]	4.9	22.1
Ethyl *trans*-cinnamate	103-36-6	166.8	18.4	8.2	4.1	20.5
Triethyl phosphate	78-40-0	171	16.8	11.5	9.2	22.3
Diethyl phthalate	84-66-2	198	17.6	9.6	4.5	20.5
Di-*n*-butyl phthalate	84-74-2	266	17.8[a]	8.6	4.1	20.3
n-Butyl benzyl phthalate	85-68-7	306	19	11.3	3.1	22.3
Tricresyl phosphate (tritolyl phosphate)	1330-78-5	613	19	12.3	4.5	23.1
Tri-*n*-butyl phosphate	126-73-8	345	16.4	6.3	4.3	18

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TABLE 9. *cont'd*

Solvent	CAS Number	Molar volume (cm^3/mol)	Solubility parameters ($MPa^{1/2}$)			
			δ_d	δ_p	δ_h	δ
Iso-propyl palmitate[c]	2239-78-3	330	14.3	3.9	3.7	15.3
Di-*n*-butyl sebacate	109-43-3	339	14.5	3.9	3.7	15.5
Methyl oleate[d]	112-62-9	340	14.5	3.9	3.7	15.5
Dioctyl phthalate (bis(2-ethylhexyl) phthalate)	117-81-7	377	16.6	7	3.1	18.2
Di-butyl stearate[c]		382	14.5	3.7	3.5	15.3
9.8. NITROGEN-CONTAINING COMPOUNDS						
Acetonitrile	75-05-8	52.6	15.3	18	6.1	24.6
Acrylonitrile	107-13-1	67.1	16.5	17.4	6.8	24.8
Propionitrile	107-12-0	70.9	15.3	14.3	5.5	21.7
Butyronitrile	109-74-0	87	15.3	12.5	5.1	20.5
Benzonitrile	100-47-0	102.6	17.4	9	3.3	19.8
Nitromethane	75-52-5	54.3	15.8	18.8	5.1	25
Nitroethane	79-24-3	71.5	16	15.5	4.5	22.7
2-Nitropropane	79-46-9	86.9	16.2	12.1	4.1	20.7
Nitrobenzene	98-95-3	102.7	20.1	8.6	4.1	22.1
Ethanolamine (2-aminoethanol)	141-43-5	60.2	17.2	15.5	21.3	31.5
Ethylene diamine	107-15-3	67.3	16.6	8.8	17	25.4
1,1-Dimethylhydrazine[c]	57-14-7	76	15.3	5.9	11	19.8
2-Pyrrolidone (2-pyrrolidinone)	616-45-5	76.4	19.4	17.4	11.3	28.4
Pyridine	110-86-1	80.9	19	8.8	5.9	21.7
n-Propylamine	107-10-8	83	17	4.9	8.6	19.6
Morpholine	110-91-8	87.1	18.8	4.9	9.2	21.5
Aniline	62-53-3	91.5	19.4	5.1	10.2	22.5
N-Methyl-2-pyrrolidone (1-methyl-2-pyrrolidinone)	872-50-4	96.5	18	12.3	7.2	22.9
n-Butylamine	109-73-9	99	16.2[a]	4.5[a]	8	18.6
Diethylamine	109-87-7	103.2	14.9	2.3	6.1	16.4
Diethylenetriamine	111-40-0	108	16.8	13.3	14.3	25.8
Cyclohexylamine	108-91-8	115.2	17.4	3.1	6.5	18.8
Quinoline	91-22-5	118	19.4	7	7.6	22.1
Di-*n*-propylamine	142-84-7	136.9	15.3	1.4	4.1	16
Formamide	75-12-7	39.8	17.2	26.2	19	36.6
Dimethylformamide	68-12-2	77	17.4	13.7	11.3	24.8
N,N-Dimethylacetamide	127-19-5	92.5	16.8	11.5	10.2	22.7
1,1,3,3-Tetramethylurea	632-22-4	120.4	16.8	8.2	11	21.7
Hexamethyl phosporamide[c] (hexamethyl phosphoric triamide)	680-31-9	175.7	18.4	8.6	11.3	23.3
9.9. SULFUR-CONTAINING COMPOUNDS						
Carbon disulfide	75-15-0	60	20.5	0	0.6	20.5
Dimethyl sulfoxide (methyl sulfoxide)	67-68-5	71.3	18.4	16.4	10.2	26.6
Ethanethiol[c] (ethyl mercaptan)	75-08-1	74.3	15.8	6.5	7.2	18.4
Dimethyl sulfone[b] (methyl sulfone)	67-71-0	75	19	19.4	12.3	29.9
Diethyl sulfide (ethyl sulfide)	352-93-2	108.2	17	3.1	2	17.4
9.10. ACID HALIDES AND ANHYDRIDES						
Acetyl chloride	75-36-5	71	15.8	10.6	3.9	19.4
Succinic anhydride[b]	108-30-5	66.8	18.6	19.2	16.6	31.5
Acetic anhydride	108-24-7	94.5	16.0[a]	11.7[a]	10.2[a]	22.3
9.11. ALCOHOLS						
Methanol	67-56-1	40.7	15.1	12.3	22.3	29.7
Ethanol	64-17-5	58.5	15.8	8.8	19.4	26.6
Ethylene cyanohydrin (hydracrylonitrile; 3-hydroxypropionitrile)	109-78-4	68.3	17.2	18.8	17.6	30.9
Allyl alcohol (2-propen-1-ol)	107-18-6	68.4	16.2	10.8	16.8	25.8
1-Propanol	71-23-8	75.2	16	6.8	17.4	24.6
2-Propanol	67-63-0	76.8	15.8	6.1	16.4	23.5
3-Chloropropanol (trimethylene chlorohydrin)	627-30-5	84.2	17.6	5.7	14.7	23.7
Furfuryl alcohol	98-00-0	86.5	17.4	7.6	15.1	24.3
1-Butanol (butyl alcohol)	71-36-3	91.5	16	5.7	15.8	23.1
2-Butanol	4221-99-2	92	15.8	5.7	14.5	22.1

TABLE 9. *cont'd*

Solvent	CAS Number	Molar volume (cm^3/mol)	Solubility parameters ($MPa^{1/2}$)			
			δ_d	δ_p	δ_h	δ
2-Methyl-1-propanol (isobutyl alcohol)	78-83-1	92.8	15.1	5.7	16	22.7
Benzyl alcohol	100-51-6	103.6	18.4	6.3	13.7	23.7
Cyclohexanol	108-93-0	106	17.4	4.1	13.5	22.5
1-Pentanol	71-41-0	109	16	4.5	13.9	21.7
2-Ethyl-1-butanol	97-95-0	123.2	15.8	4.3	13.5	21.3
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	123-42-2	124.2	15.8	8.2	10.8	20.9
1,3-Dimethyl-1-butanol	105-30-6	127.2	15.3	3.3	12.3	19.8
Ethyl lactate	687-47-8	115	16	7.6	12.5	21.7
n-Butyl lactate	138-22-7	149	15.8	6.5	10.2	19.8
Ethylene glycol monomethyl ether (2-methoxyethanol)	109-86-4	79.1	16.2	9.2	16.4	24.8
Ethylene glycol monoethyl ether (2-ethoxyethanol) Cellusolve	111-15-9	97.8	16.2	9.2	14.3	23.5
Diethylene glycol monomethyl ether (2-(2-methoxyethoxy)ethanol)	111-77-3	118	16.2	9.2	12.3	22.3
Diethylene glycol monoethyl ether (2-(2-ethyoxyethyoxy)ethanol)	111-90-0	130.9	16.2	9.2	12.3	21.9
Ethylene glycol mono-*n*-butyl ether (2-butoxyethanol) Butyl Cellusolve	111-76-2	131.6	16	5.1	12.3	22.3
2-Ethyl-1-hexanol	104-76-7	157	16	3.3	11.9	20.1
1-Octanol (capryl alcohol)	111-87-5	157.7	17	3.3	11.9	20.9
2-Octanol	123-96-6	159.1	16.2	4.9	11	20.3
Diethylene glycol mono-*n*-butyl ether (2-(2-butoxyethoxy)ethanol)	112-34-5	170.6	16	7	10.6	20.5
1-Decanol	112-30-1	191.8	17.6	2.7	10	20.5
Tridecyl alcohol[d]	112-70-9	242	14.3	3.1	9	17.2
Nonyl phenoxy ethanol[d]	27986-36-3	275	16.8	10.2	8.4	21.3
Oleyl alcohol[d]	143-28-2	316	14.3	2.7	8	16.6
Triethylene glycol mono-oleyl ether		418.5	13.3	3.1	8.4	16
9.12. ACIDS						
Formic acid	64-18-6	37.8	14.3	11.9	16.6	25
Acetic acid	64-19-7	57.1	14.5	8	13.5	21.3
Benzoic acid[b]	65-85-0	100	18.2	7	9.8	21.9
n-Butyric acid[c]	107-92-6	110	14.9	4.1	10.6	18.8
n-Octanoic acid[c]	124-07-2	159	15.1	3.3	8.2	17.6
Oleic acid	112-80-1	320	14.3	3.1	5.5	15.8
Stearic acid[b]	57-11-4	326	16.4	3.3	5.5	17.6
9.13. PHENOLS						
Phenol	108-95-2	87.5	18	5.9	14.9	24.1
1,3-Benzenediol[b] (resorcinol)	108-46-3	87.5	18	8.4	21.1	28.8
m-Cresol	108-39-4	104.7	18	5.1	12.9	22.7
o-Methoxyphenol (guaiacol)	90-05-1	109.5	18	8.2	13.3	23.7
Methyl salicylate	119-36-8	129	16	8	12.3	21.7
Nonyl phenol[d]	25154-52-3	231	16.6	4.1	9.2	19.4
9.14. WATER						
Water[c]	7732-18-5	18	15.5[a]	16.0[a]	42.4[a]	47.9
9.15. POLYHYDRIC ALCOHOLS						
Ethylene glycol	107-21-1	55.8	17	11	26	32.9
Glycerol	56-81-5	73.8	17.4	12.1	29.3	36.2
Propylene glycol (1,2-propanediol)	57-55-6	73.6	16.8	9.4	23.3	30.3
1,3-Butanediol	107-88-0	89.9	16.6	10	21.5	28.8
Diethylene glycol	111-46-6	95.3	16.2	14.7	20.5	29.9
Triethylene glycol	112-27-6	114	16	12.5	18.6	27.4
Hexylene glycol (2-methyl-2,4-pentanediol)	107-41-5	123	15.8	8.4	17.8	25.2
Dipropylene glycol[d]	110-98-5	131.3	16	20.3	18.4	31.7

[a] Altered from previously published value.
[b] Solid, treated as supercooled liquid.
[c] Values uncertain.
[d] Impure commercial product of this nominal formula.

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TABLE 10. SOLUBILITY PARAMETERS OF POLYMERS

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
10.1. MAIN CHAIN CARBON POLYMERS								
10.1.1. POLY(DIENES)								
Poly(butadiene)					14.65	Calc.		28
					17.19			66
					17.09			110
					17.15	Calc.		112
					17.2–17.6	Obs.		112
					16.6			118
					17.6			72
					16.2 ± 0.2	IPGC	75	70
Emulsion					17.19			79
Sodium					17.6			79
					16.6	Calc.		62
					17.09			104
Hydrogenated					16.6	Swelling		75
					16.47			75
					16.6	Av.		75
		16.98	–[a]	1.02	17.02			98
					16.1	^{129}Xe shift		152
Poly(1,2-butadiene)	58.85				17.06	Calc.[HK b]		3
Poly(3-methyl 1,2-butadiene)	73.88				17.39	Calc.[HK]		3
Poly(1,3-butadiene)	58.85				17.06	Calc.[HK]		3
Poly(2,3-dimethyl 1,3 butadiene)	88.91				17.60	Calc.[HK]		3
Poly(*cis*-butadiene) elastomer (Bunahyls CB10, Chemische Werke Huels)		17.53	2.25	3.42	18			56
Poly(butadiene-*co*-acrylonitrile) 丁二烯-丙烯腈共聚物								
BUNA N (82/18)					17.90–17.72			19
(82/20)					18.4	Calc.		66
					19.4	Obs.		66
BUNA N (75/25)					18.93	Calc.	25	112
					19.19	Obs.		42
					19.4	Obs.		104
					18.2			118
					19.4			79
(70/30)					20.11–20.26			19
					19.19			43
(61/39)					21.1			19
					21.28–21.38			19
					20.5 ± 0.6	IPGC	75	70
Hycar (BFGoodrich)		18.6	8.8	4.2	21			56
Poly(butadiene-*co*-styrene)								
BUNA S (94/6)					16.45–16.64			19
(90/10)					17.13			110
(87.5/12.5)					16.39–16.57			19
					16.55			43
					17.6			104
(85/15)					17.31			112
					17.19			110
					17.35	Calc.		112
					17.4	Obs.		112
					17.39			79
					17.41	Calc.		66
					17.39	Obs.		66
					17.5			104
(75/25)					17.29			110
					17.47	Calc.		112
					16.55	Obs.		112
					16.49	Obs.		112
					16.6			118
					17.5			79
					17.56	Calc.		66
					17.5	Obs.		66
					17.6			104

TABLE 10. *cont'd*

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
(71.5/28.5)					16.55–16.72			19
					17.51			112
(70/30)					17.35			110
(60/40)					17.5			110
					17.7	Calc.		112
					17.74	Obs.		112
					17.74			79
					17.76	Calc.		66
					17.74	Obs.		66
					17.8			104
Poly(butadiene-*co*-styrene) (Polysar 5630, Polymer Corp.)		17.55	3.36	2.7	18.07			56
Poly(butadiene-*co*-vinylpyridine)					19.13			79
Poly(chloroprene)					18.42		25	110
					16.59	Calc.		28
					19.19	Calc.		112
					16.74	Obs.		42
					18.93	Obs.		104
					17.6			118
					16.8			44
					18.8			72
					16.6			79
					17.6	Swelling		43
					17.54–17.74			19
					15.18			19
					18.0 ± 0.4	IPGC	75	70
					17.6	^{129}Xe shift		152
Poly(1,4-*cis*-isoprene)					15.18	Calc.	25	28
					16.64			42
					16.68		25	74
					16.57		35	74
					20.46	Swelling	35	74
					16.47	Av.	35	74
					16.47	Swelling	35	74
					16.57	Swelling	35	74
					16.68	Calc.	35	74
					16.6	Swelling		75
					16.4			76
					16.47	Av.		76
					16.82		25	110
					16.68	Calc.	25	112
					16.2	Obs.		112
					16.33	Obs.		112
					17.09	Obs.		112
					16.2			72
Poly(isoprene) elastomer (Cariflex IR 305, Shell)		16.57	1.41	−0.82	16.65			56
Natural Rubber					16.2			43
					16.6			19
					16.68			112
					17.09			104
					17			124
					16.6			118
					16.4			19,10
					17.09			79
					16.33			43
					16.6			19
					16.42–16.49			19
					16.2	^{129}Xe shift		152
Gutta percha					16.6	Calc.		73
Chlorinated					19.2			21–24
10.1.2. POLY(ALKENES)								
Poly(2,3-dimethyl 1-butene)	93.15				18.05	Calc.^{HK}		3
Poly(3,3-dimethyl 1-butene)	93.15				18.05	Calc.^{HK}		3

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TABLE 10. *cont'd*

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
Poly(3-methyl 1-butene)	78.12				17.76	Calc.[HK]		3
Poly(2-methyl 1-butene)	78.12				17.92	Calc.[HK]		3
Poly(2-methyl 2-butene)	78.12				17.68	Calc.[HK]		3
Polyethylene					15.76			110
					16.6	Calc.		112
					16			58
					16.2			97
					17.09			8
					16.4	Calc.		124
					16.2			118
					16.2			72
					16.8	Calc.		97
					16.2	Obs.		73
					18.4	^{129}Xe shift		152
					17.99	Calc.		119
Poly(ethylene)	33.03				16.96	Calc.[HK]		3
Poly(1,1-diphenyl ethylene)	166.29				19.93	Calc.[HK]		3
Poly(methylene)					14.3	Extrapol.	20	45
Poly(ethylene-*co*-vinyl acetate)					18.6 ± 0.9	IPGC	25	71
					17.0 ± 0.4	IPGC	75	70
Poly(isobutene)					14.5	Calc.		28
					16.06	Av.	35	74
					16	Swelling		74
					16.47	Swelling		74
					16.25			19,10
					16.06		25	110
					15.76	Calc.		112
					16.47	Obs.		112
					16.4			58
					16.47			104
					16.6			21–24
					16			19
					17	Calc.		124
					16.47			72
					16.47			79
Poly(isobutylene) (Lutonal IC/123, BASF)		14.53	2.52	4.66	15.47			56
					15	^{129}Xe shift		152
Poly(isobutene-*co*-isoprene) butyl rubber					15.9–16.06			19
					16.47			104
					15.76			112
Poly(propylene)					18.8		25	58
					19.2	Calc.		124
Poly(propylene)	48.06				17.49	Calc.[HK]		3
Poly(propylene), isotactic (Profax 6701, Hercules)		17.19	–	–	17.19			81
Poly(propylene), chlorinated (Parlon P10, Hercules)		20.26	6.32	5.4	21.89			56
Poly(2-methyl propene)	63.09				17.72	Calc.[HK]		3
10.1.3. POLY(ACRYLICS) AND POLY(METHACRYLICS)								
Poly(acrylic acid), butyl ester					18		35	75
					18.01	Av.		75
					18.52	Swelling		75
					17.4	Calc.		75
					18.6	Swelling		77
					18.52			77
					19.77	Calc.		119
Poly(acrylic acid), ethyl ester					19.13	Av.		75
					19.2	Swelling		75
					19.8	Calc.		75
					19.2	Swelling		77
					19.13			77
					19.19			45
					18.8	Calc.		62
					20.4	Calc.		119

TABLE 10. *cont'd*

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
Poly(acrylic acid), isobornyl ester					16.8	Calc.		62
Poly(acrylic acid), methyl ester					20.7	Av.		75
					20.77	Swelling		75
					20.1	Calc.		75
					20.77	Swelling		77
					21.3			77
					20.7	Swelling		77
Poly(acrylic acid), propyl ester					18.52			75
					18.42	Av.		75
					18.4	Calc.		75
Poly(α-chloroacrylic acid), methyl ester					20.7	Calc.		112
Poly(methacrylic acid), butyl ester					17.9	Swelling		77
					17.8			77
					18.01	Swelling		77
					17.9			77
					17	Calc.		73
					14.7	IPGC	140	31
Poly(methacrylic acid), isobutyl ester					14.7	IPGC	140	31
Poly(methacrylic acid), *sec*-butyl ester					14.7	IPGC	140	31
Poly(methacrylic acid), ethoxyethyl ester					18.4	Swelling		77
					20.3			77
Poly(methacrylic acid), ethyl ester					18.31	Swelling		77
					18.2			77
					18.6	Calc.		73
Poly(ethyl methacrylate) (Lucite 2042, DuPont)		18.64	10.52	7.51	22.69			56
					20.4	^{129}Xe shift		152
Poly(methacrylic acid), *n*-hexyl ester					17.6	Calc.		73
Poly(methacrylic acid), isobornyl ester					16.6			62
Poly(methacrylic acid), lauryl ester					16.8	Calc.		73
Poly(methacrylic acid), methyl ester					18.58		25	19
					18.52–18.66			19
					19.4	Swelling		77
					19.34			77
					26.27			110
					18.93	Calc.		112
					18.4–19.4			7
					18.58			118
					19.5	Calc.		119
Poly(methyl methacrylate) (Rohm and Haas)		18.64	10.52	7.51	22.69			56
Poly(methacrylic acid), octyl ester					17.2	Calc.		73
Poly(methacrylic acid), propyl ester					18	Calc.		73
Poly(methacrylic acid), stearyl ester					16	Calc.		73
Poly(methacrylonitrile)					21			118
					21.9	Calc.		112
10.1.4. POLY(VINYL ALCOHOLS)								
Poly(vinyl alcohol)					25.78			110
					21.7			139
Poly(4-vinyl phenol)					22.5			139
10.1.5. POLY(VINYL ESTERS)								
Poly(vinyl acetate)					19.62	Calc.	25	28
					19.13		35	78
					20.93	Calc.		119
					19.2	Calc.		78
					18			78
					22.61		25	110
					19.2	Calc.		112
					19.2			118
Poly(vinyl acetate) (Mowilith 50, Hoechst)		20.93	11.27	9.66	25.66			56
Poly(vinyl acetate-*co*-vinyl alcohol)					21.94	Calc.		119
Poly(vinyl butyral) (Butvar B76, Shawinigan)		18.6	4.36	13.03	23.12			56
Poly(vinyl propionate)					18.01		35	78
					18.52	Calc.		78

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TABLE 10. *cont'd*

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
10.1.6. POLY(ALLYL ETHERS) AND POLY(VINYL ETHERS)								
Poly(allyl methyl ether)	70.79				19.44	Calc.[HK]		3
Poly(allyl ethyl ether)	85.82				19.29	Calc.[HK]		3
Poly(allyl propyl ether)	100.85				19.21	Calc.[HK]		3
Poly(allyl isopropyl ether)	100.85				19.21	Calc.[HK]		3
Poly(allyl phenyl ether)	122.39				20.19	Calc.[HK]		3
Poly(allyl 2, tolyl ether)	137.41				20.03	Calc.[HK]		3
Poly(allyl 3, tolyl ether)	137.41				20.03	Calc.[HK]		3
Poly(allyl 4, tolyl ether)	137.41				20.03	Calc.[HK]		3
Poly(diallyl ether)	96.61				18.84	Calc.[HK]		3
Poly(vinyl methyl ether)	55.76				19.66	Calc.[HK]		3
Poly(vinyl ethyl ether)	70.79				19.44	Calc.[HK]		3
Poly(vinyl propyl ether)	85.82				19.29	Calc.[HK]		3
Poly(vinyl butyl ether)	100.85				19.21	Calc.[HK]		3
Poly(vinyl isopropyl ether)	85.82				19.29	Calc.[HK]		3
Poly(vinyl isobutyl ether)	100.85				19.21	Calc.[HK]		3
Poly(vinyl isoamyl ether)	115.88				19.13	Calc.[HK]		3
Poly(vinyl-1-amyl methyl ether)	119.91				20.83	Calc.[HK]		3
Poly(vinyl-2-ethyl hexyl ether)	160.96				18.99	Calc.[HK]		3
Poly(vinyl-2-methoxyethyl ether)	93.52				20.44	Calc.[HK]		3
Poly(vinyl phenyl ether)	107.36				20.19	Calc.[HK]		3
Poly(vinyl-1-phenyl methyl ether)	122.39				20.19	Calc.[HK]		3
Poly(vinyl-1-methyl phenyl ether)	122.39				20.19	Calc.[HK]		3
Poly(vinyl-1-phenyl phenyl ether)	174.01				20.50	Calc.[HK]		3
Poly(1-methyl vinyl ethyl ether)	85.82				19.29	Calc.[HK]		3
Poly(1-ethyl vinyl ethyl ether)	100.85				19.21	Calc.[HK]		3
Poly(1-phenyl vinyl ethyl ether)	137.41				20.03	Calc.[HK]		3
Poly(divinyl ether)	66.55				18.93	Calc.[HK]		3
10.1.7. POLY(VINYL HALIDES) AND POLY(VINYL NITRILES)								
Poly(acrylonitrile)					25.27	Calc.		119
					25.6			66
					26.09	Calc.	25	112
					31.5			118
		18.21	16.16	6.75	25.27			98
Poly(allyl acetonitrile)	81.13				24.18	Calc.[HK]		3
Poly(1-methyl acrylonitrile)	66.09				25.45	Calc.[HK]		3
Poly(2-methyl acrylonitrile)	66.09				25.45	Calc.[HK]		3
Poly(acrylonitrile-*co*-isopropyl methacrylate)					19.84			141
Poly(tetrafluoroethylene)					12.7	Calc.		112
					12.7			118
Poly(vinyl bromide)					19.42			34
					19.6			112
Poly(vinyl chloride)					19.19–19.34			19
					19.28	Calc.		28
					20.67			110
					19.54	Calc.		112
					19.8	Obs.		72
					19.2			19
					19.8			21–24
					22.1			58
					20.1			124
					19.5			118
					19.8			72
					20.32	Calc.		119
Poly(vinyl chloride) (Vipla KR, K = 50, Montecatini)		18.23	7.53	8.35	21.42			56
Poly(vinyl chloride)		18.72	10.03	3.07	21.46			33
		18.82	10.03	3.07	21.54			98
Poly(vinyl chloride), high molecular weight					20.13	Turbidity		162
					20.25	Swelling		162
					20.3	Visc.		162
Poly(vinyl chloride), chlorinated					19	Visc.	25	117

TABLE 10. *cont'd*

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
Poly(vinyl chloride-*co*-vinyl acetate) (87/13)					21.7	Calc.		28
					21.3			21–24
VYHH					20.42	Calc.		119
Poly(vinyl chloride-*co*-vinyl acetate-*co*-maleic acid)					20.44	Calc.		119
Poly(vinyl chloride-*co*-vinyl acetate-*co*-vinyl alcohol)					20.77	Calc.		119
Poly(allyl cyanide)	66.09				25.45	Calc.[HK]		3
Poly(allyl isocyanide)	66.09				25.45	Calc.[HK]		3
Poly(vinylidene chloride)					25			21–24
Poly(vinylidene cyanide-*co*-vinyl acetate)					22.67	Calc.		128
Poly(vinylidene fluoride)		–	–	–	23.2	Visc.		147
		17.2	12.5	9.2	23.2	Obs.		147
		16.6, 17.9				Calc.		147
		16.6				Refract. index		147
		13.7	10.6	8.2	19.2	Contact ang.		149
					24.6, 25.2	Swelling		148
10.1.8. POLY(STYRENES)								
Poly(styrene)					17.52			19
					17.45–17.58			19
					20.16	Calc.		28
					17.86–17.92			48
					17.84–18.56	Visc.		116
					18.6			66
					18.72		35	74
					18.62	Av.		74
					18.62	Swelling		74
					18.66	Calc.		74
					19.09		25	110
					18.66	Calc.		112
					18.6	Obs.		112
					17.6–19.8	Obs.		112
					17.4			18
					17.6			19
					18.4			58
					19.28	Calc.		119
					21.1	Calc.		124
					17.52			118
					17.84			19,97
					18.6			104
					17.6–17.8			72
					18.6			79
					15.6	IPGC	140	31
Poly(styrene) (Polystyrene LG, BASF)		21.28	5.75	4.3	22.47			56
Poly(*o*-methyl styrene)	114.69				19.33	Calc.[HK]		3
Poly(*m*-methyl styrene)	114.69				19.33	Calc.[HK]		3
Poly(*p*-methyl styrene)	114.69				19.33	Calc.[HK]		3
Poly(1-methyl styrene)	114.69				19.33	Calc.[HK]		3
Poly(methoxy styrene)	122.39				20.19	Calc.[HK]		3
Poly(cyano styrene)	124.28				22.36	Calc.[HK]		3
Poly(nitro styrene)	113.29				22.71	Calc.[S']		3
Poly(2-nitro styrene)	113.29				22.20	Calc.[S]		3
Poly(styrene-*co*-divinylbenzene)					18.6	Obs.		112
					17.39			18
5% crosslinking					14.8			137
10% crosslinking					15.7			137
20% crosslinking					17.8			137
Poly(styrene-*co*-*n*-butyl methacrylate)					15.1	IPGC	140	31
Poly(styrene-*co*-isobutyl methacrylate)					15.1	IPGC	140	31
Poly(4-chlorostyrene)		17.6	6.1	4.1	19.02			151
Poly(α-methylstyrene-*co*-acrylonitrile)					16.4	IPGC	140	111
Poly(4-acetoxystyrene)		17.8	9	8.4	21.7			138
Poly(4-hydroxystyrene)		17.6	10	13.7	24.55			138

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TABLE 10. *cont'd*

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
Poly(4-α-acetoxystyrene), $-CH_2-C-(OCOCH_3)-(C_6H_5-OCOR)-$, $R=CH_3$, C_2H_5, n-C_3H_7, OCH_3		15.7	10.2	7.4	21.9			161
Poly(vinylidene cyanide-*co*-4-α-acetoxystyrene), $-CH_2-C(CN)_2-CH_2-C-(OCOCH_3)-(C_6H_5-OCOR)-$, $R=CH_3$		21.5	11.3	7.2	25.3			161
Poly(vinylidene cyanide-*co*-4-α-acetoxystyrene), $R=OCOCH_3$		17	13.5	6.5	23.5			161
Poly(vinylidene cyanide-*co*-4-α-acetoxystyrene), $R=OCOCH_3$		17	12.1	8.2	22.4			161
Poly(vinylidene cyanide-*co*-4-α-acetoxystyrene), $R=OCOCH_3$		17	11.9	7.2	21.9			161
10.2. MAIN CHAIN C–O POLYMERS								
10.2.1. POLY(VINYL ESTERS)								
Poly(vinyl acetate)	74.25				18.21	Calc.[HK]		3
Poly(allyl acetate)	89.28				18.27	Calc.[HK]		3
Poly(diethylaminoethyl acrylate)-palladium ion					20.50			136
Poly(methyl acrylate)	74.25				18.21	Calc.[HK]		3
Poly(ethyl acrylate)	89.28				18.27	Calc.[HK]		3
Poly(allyl acrylate)	100.07				17.94	Calc.[HK]		3
Poly(butyl acrylate)	119.34				20.42	Calc.[HK]		3
Poly(isobutyl acrylate)	119.34				18.37	Calc.[HK]		3
Poly(2-ethyl hexyl acrylate)	179.46				18.45	Calc.[HK]		3
Poly(2-cyanoethyl acrylate)[a]	89.36				31.77	Calc.[HK]		3
Poly(benzyl acrylate)	140.88				19.38	Calc.[HK]		3
Poly(vinyl butyrate)	104.31				18.33	Calc.[HK]		3
Poly(dimethyl citraconate)	130.5				18.58	Calc.[HK]		3
Poly(diethyl citraconate)	160.58				18.58	Calc.[HK]		3
Poly(vinyl crotonate)	100.07				17.94	Calc.[HK]		3
Poly(methyl dimethyl fumarate)	130.5				18.58	Calc.[HK]		3
Poly(methyl diethyl fumarate)	160.56				18.58	Calc.[HK]		3
Poly(dimethyl fumarate)	115.47				18.56	Calc.[HK]		3
Poly(diethyl fumarate)	145.53				18.58	Calc.[HK]		3
Poly(dipropyl fumarate)	165.58				19.72	Calc.[HK]		3
Poly(di-*n*-butyl fumarate)	205.65				18.60	Calc.[HK]		3
Poly(di-*n*-amyl fumarate)	235.71				18.60	Calc.[HK]		3
Poly(di-isopropyl fumarate)	165.58				19.72	Calc.[HK]		3
Poly(di-isobutyl fumarate)	205.65				18.60	Calc.[HK]		3
Poly(di-isoamyl fumarate)	235.71				18.60	Calc.[HK]		3
Poly(dinitrile fumarate)	46.32				48.45	Calc.[HK]		3
Poly(diphenyl fumarate)	217.67				19.91	Calc.[HK]		3
Poly(vinyl-2-ethyl hexoate)	157.83				19.21	Calc.[HK]		3
Poly(dimethyl maleate)	115.47				18.56	Calc.[HK]		3
Poly(diethyl maleate)	145.53				18.58	Calc.[HK]		3
Poly(di-*n*-propyl maleate)	165.58				19.70	Calc.[HK]		3
Poly(di-*n*-butyl maleate)	205.65				18.60	Calc.[HK]		3
Poly(di-*n*-amyl maleate)	235.71				18.60	Calc.[HK]		3
Poly(di-isobutyl maleate)	205.65				18.60	Calc.[HK]		3
Poly(di-isoamyl maleate)	235.71				18.60	Calc.[HK]		3
Poly(diphenyl maleate)	217.67				19.91	Calc.[HK]		3
Poly(3-chloropropyl methacrylate)					19.60			160
Poly(methyl methacrylate)	89.28				18.27	Calc.[HK]		3
Poly(ethyl methacrylate)	110.9				17.25	Calc.[HK]		3
Poly(propyl methacrylate)	119.34				18.37	Calc.[HK]		3
Poly(butyl methacrylate)	134.37				18.41	Calc.[HK]		3
Poly(hexyl methacrylate)	191.91				15.80	Calc.[HK]		3
Poly(allyl methacrylate)	115.1				17.51	Calc.[S]		3
Poly(isopropyl methacrylate)	119.34				18.39	Calc.[HK]		3
Poly(isobutyl methacrylate)	134.37				18.39	Calc.[HK]		3
Poly(vinyl propionate)	89.32				18.27	Calc.[HK]		3

TABLE 10. *cont'd*

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
10.3. MAIN CHAIN C–N POLYMERS								
10.3.1. POLY(AMIDES)								
Poly(lactams)								
Nylon 3					26.2	Calc.		139
Nylon 4					23.9	Calc.		139
		19.44	–[a]	14.12	24.02			81
Nylon 5					22.5	Calc.		139
Nylon 6					21.5	Calc.		139
Nylon 7					20.7	Calc.		139
Nylon 8					20.3	Calc.		139
Nylon 9					19.8	Calc.		139
Nylon 10					19.4	Calc.		139
Nylon 11					19.2	Calc.		139
Nylon 12					19	Calc.		139
Nylon 2-I					27.2	Calc.		139
Nylon 3-I					26	Calc.		139
Nylon 4-I					25	Calc.		139
Nylon 5-I					24.1	Calc.		139
Nylon 6-I					23.5	Calc.		139
Nylon 6I, poly(hexamethylene isophthalamide)					26.3	Calc.[HK]		150
					23.2	Calc.[H']		150
Nylon 7-I					22.9	Calc.		139
Nylon 8-I					22.5	Calc.		139
Nylon 9-I					22.1	Calc.		139
Nylon 10-I					21.7	Calc.		139
Nylon 12-I					21.1	Calc.		139
Nylon 66		18.62	5.11	12.28	22.87			98
Nylon 66 (Zytel, DuPont)		18.62	0	14.12	23.37			56
Poly(iminohexamethylene iminoadipoyl)					27.8			118
Poly(amide), thermoplastics (Versamid 930, General Mills)		17.43	– 1.92	14.89	23.02			56
Poly(*p*-benzamide)		18	11.9	7.9	23	Swelling		143
Poly(*p*-phenylene terephthalamide)		18	11.9	7.9	23	Swelling		143
Poly(*p*-benzanilide terephthalamide)		18	11.9	7.9	23	Swelling		143
Poly(*n*-isopropyl acrylamide)					22.8	Calc.		154
Gel					23.5	Swelling		153
10.3.2. CELLULOSE AND DERIVATIVES								
Benzyl cellulose					25.23			110
Cellulose					32.02			110
		12.69	–[a]	22.3	25.66			81
Cellulose		8.27	8	13.88	18.03			140
Cellulose–alkylketene dimer treatment		8.1	12.35	7.96	16.78			140
Cellulose acetate (56% acetate groups)					27.83			110
(48% acetate groups)					27.19			110
Cellulose acetate (Cellidore A. Bayer)		18.6	12.73	11.01	25.08			56
Cellulose acetate		15.55	–[a]	11.87	19.56			81
Cellulose acetate butyrate		15.75	–[a]	8.59	17.94			81
Cellulose acetate propionate		15.75	–[a]	10.23	18.76			18
Cellulose diacetate					23.22	Calc.		112
					22.3			118
					22.3			72
Cellulose nitrate (11.83% N)					30.39			110
					21.44			112
					21.7			72
					23.5			21–24
(11.4% N)					21.93			72
Cellulose nitrate (1/2 sec; H-23 Hagedon)		15.41	14.73	8.84	23.08			56
Cellulose triacetate		15.55	–[a]	10.64	18.84			81
Cellulose tridecanoate		19.85	–[a]	6.14	20.77			81
Ethyl cellulose					21.1			21–24

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TABLE 10. *cont'd*

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
10.4. OTHER POLYMERS								
Alcohol soluble resin (Pentalyn 255, Hercules)		17.5	9.3	14.3	24.4			56
Alcohol soluble rosin resin (Pentalyn 830, Hercules)		20	5.8	10.9	23.5			56
Alkyd, short oil (coconut oil 34% phthalic anhydride, Plexal C34)		18.5	9.21	4.91	21.24			56
Alkyd resin, medium oil length					19.2			21–24
Alkyd, long oil (66% oil length, Plexal P65, Polyplex)		20.42	3.44	4.56	12.2			56
Coumarone-indene resin (Piccoumarone 450L, Penn. Ind. Chem.)		19.42	5.48	5.77	20.99			56
Epoxy resin					22.3			118
Epoxy (Epikote 1001, Shell)		20.36	12.03	11.48	26.29			56
Epoxy DBEBA–DDMe*	32				22		35	135
DGEBA–DMM	22				22.2		35	135
TGAP–DDMe	22.4				22.5		35	135
TGAP–ANI					23.9		35	135
TGAP–DDM					24.8		35	135
TGAP–DDS					27.1		35	135
Ester gum (ester gum BL, Hercules)		19.64	4.73	7.77	21.65			56
Furfuryl alcohol resin (Durez 14383, Hooker Chemical)		21.16	13.56	12.81	28.21			56
Hexamethoxymethyl melamine (Cymel 300, American Cyanimid)		20.36	8.53	10.64	24.51			56
Pentaerythritol ester of rosin, modified (Cellolyn 102, Hercules)		21.73	0.94	8.53	23.37			56
Petroleum hydrocarbon resin (Piccopale 110, Penn. Ind. Chem.)		17.55	1.19	3.6	17.96			56
Phenolic resin (resole, Phenodur 373U Chemische Werke Albert)		19.74	11.62	14.59	27.15			56
Phenolic resin (Super Beckacite 1001, Reichhold)		23.26	6.56	8.35	25.57			56
Poly(2-acrylamide-2-methyl propane sulphonamide) (tested in formamide/water mixtures)					43.6	Visc.	25	159
Poly(3,3-dimethyl oxetane)		15.35	2.46	4.09	16.16	Visc.		92
Poly(3,3-diethyl oxetane)		15.55	2.05	3.48	16.16	Visc.		92
Poly(1,3-dioxolane)					20.66	Visc.	25	175
Poly(ether urethane)					$17.99 \pm .02$	IPGC	25	158
					17.38 ± 0.16	IPGC	100	158
					17.20 ± 0.15	IPGC	120	158
					17.14 ± 0.14	IPGC	130	158
					17.06 ± 0.15	IPGC	140	158
					16.96 ± 0.15	IPGC	150	158
Poly(DL-lactic acid)					21.0 ± 0.3	Density	25	142
					20.5 ± 0.4	Visc.	25	142
					19.8	Calc.^{S}	25	142
					20.3	Calc.^{H}	25	142
					19.2	Calc.^{HK}	25	142
Poly(oxetane)		17.39	5.12	5.12	19.23			92
Poly(oxydimethylsilylene)					15.04			110
					14.9	Obs.		21–24
					15.45	Swelling		76
					15.6	Av.		76
					14.9			118
					15.59			45
					15.4		25	125
					15	Vapor sorp.		145
					15.1	IPGC		146

* DGEBA – diglycidyl ether of bisphenol A; DDMe – tetraethyl derivative of DDM; DDM – diamino diphenyl methane; TGAP – triglycidyl derivative of amino phenol; ANI – aniline; DDS – diamino diphenylsulfone.

TABLE 10. *cont'd*

Polymer	Molar volume (cm^3/gmol)	Solubility parameters $(MPa)^{1/2}$ δ_d	δ_p	δ_h	δ	Method	T(°C)	Refs.
$\delta_2 = (15.7 - 0.026)t$, t in °C					15.1	IPGC		144
					17.5	^{129}Xe shift		152
Poly(ethylene adipate)		16.3 ± 2	6.1 ± 0.5	9.4 ± 0.1	19.8 ± 2			157
Poly(ethylene oxide)					20.2 ± 2	IPGC	25	31
		17.3 ± 2	3.0 ± 1	9.4 ± 0.5	19.9 ± 2.2			157
					17.8	Calc.		157
					19.64	IPGC	70	176
Poly(oxyethyleneoxyterephthaloyl)					21.9			118
					21.9			112
Poly(oxytrimethylene) polyoxetane					19.2	Visc.	25	31
-3,3 dimethyl					16.2	Visc.	25	92
-3,3 diethyl					16.2	Visc.	25	92
Poly(propylene oxide)					16.3		81	156
					16.2		86	156
					16.1		91	156
		16.3 ± 1	4.7 ± 0.5	7.4 ± 0.5	18.5 ± 1.2			157
					15.9	Calc.		157
Poly(sulfone), Bisphenol A (Udel)		19.03	0	6.96	20.26			81
Poly(thioethylene)					19.23			110
					19.19	Swelling		43
					18.4	Swelling		43
Poly(thiophenylethylene)					19.0 ± 1.0			87
Poly(urethane) (unknown composition)					20.5	Swelling		76
					20.5	Av.		76
Poly(urethane), amorphous					22.9			155
Poly(vinyl ethylene)					16.5	^{129}Xe shift		152
Poly(vinyl pyrrolidone)					25.6	Visc.		177
Poly(vinyl methyl ketone)	66.59				22.92	Calc.^{HK}		3
Poly(vinyl ethyl ketone)	81.58				22.14	Calc.^{HK}		3
Poly(vinyl methyl sulfide)	66.63				19.52	Calc.^{HK}		3
Poly(vinyl phenyl sulfide)	118.35				20.28	Calc.^{HK}		3
Terpene resin (Piccolyte S-1000, Penn. Ind. Chem.)		16.47	0.37	2.84	16.72			56
Urea-formaldehyde resin (Plastopal H, BASF)		20.81	8.29	12.71	25.74			56
Viton		17	10.3	6.1	20.8			130

[a] Altered from previously published value.
[b] Method of van Krevelen and Hoftyzee.
[c] Method of Small.
[d] Method of Hoy.

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