



COATINGS

Solvent Properties Chart

INDORAMA
VENTURES

Indispensable Chemistry





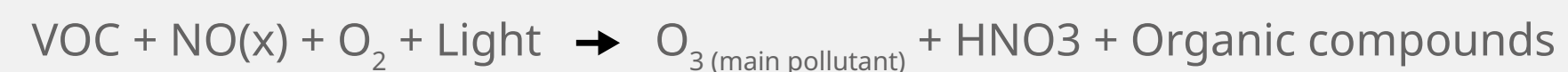
SOLVENTS	Formula	Molecular weight	CAS N°	Density (20/20 °C)	Boiling point at 760mmHg (°C)	Evaporation rate (butyl acetate =100)	Hansen solubility parameters (J/cm ³) ^{1/2}			Viscosity (10% Nitrocellulose 1/2s solution, 25 °C) (cP)	Dilution rate			Blushing resistance at 25 °C (% U.R.)	Solubility at 20 °C (% weight)		Distillation range at 760 mmHg (°C)	Freezing point (°C)	Flash point (closed Cup) (°C)
							d D	d P	d H		Toluene	Xylene	Naphta		Solvent in water	Water in solvent			
Cetonas																			
Acetone	CH ₃ COCH ₃	58.08	67-64-1	0.792	56.1	560	15.5	10.4	7.0	12	4.5	---	0.7	20	100	100	56 - 57	-94.9	-17
Diacetonalcohol	CH ₃ COCH ₂ C(CH ₃) ₂ OH	116.16	123-42-2	0.939	169.2	12	15.8	8.2	10.8	295	3.0	2.3	0.5	76	100	100	155-175	-42.8	45.0
Diisobutylketone	(CH ₃) ₂ CHCH ₂ COCH ₂ CH(CH ₃) ₂	142.24	108-83-8	0.808	169.3	19	16.0	3.7	4.1	148	1.5	1.5	0.8	95	0.05	0.70	163-173	-41.5	49.0
Isophorone	COCH=C(CH ₃)CH ₂ C(CH ₃) ₂ CH ₂	138.20	78-59-1	0.922	215.2	2	17.0	8.0	5.0	220	6.2	5.1	0.3	97	1.20	4.30	215-220	-8.1	84.4
Methyl Amyl Ketone	CH ₃ COC ₅ H ₁₁	114.18	110-43-0	0.818	151.4	33	16.2	5.7	4.1	40	3.9	3.6	1.2	93	0.50	1.30	147 - 153	-27.0	39.0
Methyl Ethyl Ketone	CH ₃ COC ₂ H ₅	72.10	78-93-3	0.806	79.6	390	16.0	9.0	5.1	20	4.3	---	0.9	45	27.00	12.50	78-81	-86.7	-5
Methyl Isoamyl Ketone	CH ₃ COC ₂ H ₄ CH(CH ₃) ₂	114.18	110-12-3	0.814	144.9	53	16.0	5.7	4.1	42	4.1	---	1.2	89	0.50	1.20	141-148	-73.9	36.0
Alcohols																			
n-Butanol	C ₄ H ₉ OH	74.12	71-36-3	0.811	117.7	46	16.0	5.7	15.8	Insoluble	---	---	---	---	7.90	20.10	116.5-118.5	-89.0	35.0
Ethanol	C ₂ H ₅ OH	46.07	64-17-5	0.791	78.3	165	15.8	8.8	19.4	Insoluble	---	---	---	---	100	100	78.3-78.5	-114.1	12.78
Isoamyl alcohol	(CH ₃) ₂ CHCH ₂ CH ₂ OH	88.15	123-51-3	0.812	131.4	20	15.8	5.2	13.3	Insoluble	---	---	---	---	1.70	9.50	120 - 138	-117.2	42.7
Isopropanol	(CH ₃) ₂ CHOH	60.09	67-63-0	0.786	82.4	150	15.8	6.1	16.4	Insoluble	---	---	---	---	100	100	81.5-83.0	-89.5	12.0
Methanol	CH ₃ OH	32.04	67-56-1	0.793	64.5	210	14.7	12.3	22.3	25	2.2	---	0.5	---	100	100	64-65	-97.8	11.1
n-Propanol	CH ₃ CH ₂ CH ₂ OH	60.09	71-23-8	0.805	97.2	89	16.0	6.8	17.4	Insoluble	---	---	---	---	100	100	96-98	-127.0	15.0
s-Butanol/ ULTRASOLVE® L 1100	CH ₃ CHOHCH ₂ CH ₃	74.12	78-92-2	0.808	99.5	89.7	15.8	5.7	14.5	Insoluble	---	---	---	---	60.00	22.50	98 - 101	-114.7	23.9
Esters																			
n-Butyl acetate	CH ₃ COOC ₄ H ₉	116.16	123-86-4	0.883	126.1	100	15.8	3.7	6.3	49	2.7	2.7	1.4	83	0.70	1.60	124-127	-73.5	22.2
Butyl Diglycol Acetate	CH ₃ COOC ₂ H ₄ OC ₂ H ₉	160.22	112-07-2	0.942	191.6	3.7	15.3	7.5	6.8	188	1.8	---	1.2	96	1.50	1.70	186 - 194	-64.6	74
Ethyl Acetate	CH ₃ COOC ₂ H ₅	88.10	141-78-6	0.901	77.2	400	15.8	5.3	7.2	36	3.1	---	1.1	39	8.70	3.30	75.5 - 78.0	-83.6	-3
Ethylglycol Acetate	CH ₃ COOC ₂ H ₄ OC ₂ H ₅	132.16	111-15-9	0.974	156.3	19	15.9	4.7	10.6	130	2.5	2.3	0.9	94	23.80	6.50	150-160	-61.7	52
Isobutyl Acetate	CH ₃ COOCH ₂ CH(CH ₃) ₂	116.16	110-19-0	0.873	117.2	145	15.1	3.7	6.3	42	2.7	---	1.1	80	0.70	1.60	116-119	-99.8	21
Isoamyl Acetate	CH ₃ COOC ₅ H ₁₁	130.19	123-92-2	0.875	142.0	53	15.3	3.7	6.9	65	2.3	---	1.3	91	0.20	0.90	139 - 144	-100.0	34
n-Propyl acetate/ ULTRASOLVE® M 2200	CH ₃ COOC ₃ H ₇	102.14	109-60-4	0.889	101.6	209	15.3	4.3	7.6	38	3.2	---	1.5	65	2.30	2.60	99-103	-92.5	14
Propylglycol Acetate/ ULTRASOLVE® H 2300	CH ₃ COOC ₂ H ₄ OC ₃ H ₇	146.18	20706-25-6	0.94	173.6	8	16.0	5.0	6.2	158	---	---	---	95	5.0	---	---	-47.8	66,3
s-Butyl acetate/ ULTRASOLVE® M 1200	CH ₃ COOCH(CH ₃)CH ₂ CH ₃	116.16	105-46-4	0.875	112.0	195	15.1	3.7	6.3	63	2.9	---	---	---	2.00	2.60	---	-99.0	17
Propylene Glycol Methyl Ether Acetate	CH ₃ COOCH(CH ₃)CH ₂ OCH ₃	132.20	108-65-6	0.968	145.8	33	15.6	5.6	9.8	180	2.5	---	0.4	87	19.80	3.21	140-150	-66.0	47
Glycolic Ethers																			
Butylglycol	C ₄ H ₉ OC ₂ H ₄ OH	118.18	111-76-2	0.902	171.2	7	16.0	5.1	12.3	220	3.4	3.2	2.1	96	100	100	168-172	-70.0	65.5
Butyldiglycol	C ₄ H ₉ (OC ₂ H ₄) ₂ OH	162.22	112-34-5	0.956	230.6	< 1	16.0	7.0	10.6	510	3.9	4.2	1.9	85	100	100	223-235	-68.1	105
Methyl Dipropylene Glycol Ether	CH ₃ O[CH ₂ CH(CH ₃)O] ₂ H	148.12	34590-94-8	0.951	188.3	2	16.1	6.7	10.4	530	3.4	---	0.8	90	100	100	184-193	-82.7	75
Methyl Propylene Glycol Ether	CH ₃ OCH ₂ CHOHCH ₃	90.12	107-98-2	0.923	120.1	71	15.6	6.3	11.6	187	4.0	---	0.9	61	100	100	117-125	-96.6	32
Ethyldiglycol	C ₂ H ₅ (OC ₂ H ₄) ₂ OH	134.17	111-90-0	0.990	202.7	< 1	16.1	9.2	12.2	376	1.9	1.2	0.2	76	100	100	196-207	-76.0	91
Ethylglycol	C ₂ H ₅ OC ₂ H ₄ OH	90.12	110-80-5	0.931	135.1	35	15.9	7.2	14.0	143	4.9	4.3	1.1	59	100	100	134-137	-76.0	43
Ethyltriglycol	C ₂ H ₅ (OC ₂ H ₄) ₃ OH	178.2	112-50-5	1.023	256.0	< 1	16.2	7.1	10.8	---	---	---	---	---	100	100	---	-19	129
Methyldiglycol	CH ₃ (OC ₂ H ₄) ₂ OH	120.15	111-77-3	1.028	194.2	2	16.2	7.8	12.6	371	2.3	1.0	---	76	100	100	188-198	-85.0	83
Propylglycol/ ULTRASOLVE® H2400	C ₃ H ₇ OC ₂ H ₄ OH	104.15	2807-30-9	0.913	151.1	20	16.1	8.7	13.5	181	4.0	---	2.0	90	100	100	149.5-153.5	-90	57.2
Propyldiglycol/ ULTRASOLVE® H2440	C ₃ H ₇ (OC ₂ H ₄) ₂ OH	148.2	6881-94-3	0.969	215	< 1	16.0	7.2	11.3	443	4.6	---	1.6	---	100	100	210 - 220	-53	93
Propyltriglycol/ ULTRASOLVE® H2480	C ₃ H ₇ (OC ₂ H ₄) ₃ OH	192.1	23305-64-8	0.992	270.3	<0.01	16.1	6.5	9.9	---	---	---	---	---	---	---	---	-25	117.3
Glycols																			
Ethylene Glycol	HOCH ₂ CH ₂ OH	62.07	107-21-1	1.115	197.6	<1	17.0	11.0	26.0	---	---	---	---	---	100	100	194-199	-12.7	116
Diethylene Glycol	HOCH ₂ CH ₂ OCH ₂ CH ₂ OH	106.12	111-46-6	1.118	245.8	<0.1	16.6	12.0	19.0	---	---	---	---	---	100	100	242-250	-7.8	124
Hydrocarbons																			
Toluene	C ₆ H ₅ CH ₃	92.13	108-88-3	0.870	110.5	200	18.0	1.4	2.0	Insoluble	---	---	---	---	0.06	0.05	109-111	-95.1	4.4
Xylene	C ₆ H ₄ (CH ₃) ₂	106.16	1330-20-7	0.869	140.0	77	17.6	1.0	3.1	Insoluble	---	---	---	---	0.04	0.05	136-144	-45.0	31
Hexane	CH ₃ (CH ₂) ₄ CH ₃	86.18	110-54-3	0.682	68.7	765	14.9	0.0	0.0	Insoluble	---	---	---	---	0.01	0.00	64-74	-95.0	-35
Solvent Naphta C-9	Mixture	---	64742-95-6	0.867	165.9	27	17.6	0.8	2.0	Insoluble	---	---	---	---	0.02	---	155-180	-60	40
Stoddard Solvent	Mixture	---	64475-85-0	0.774	148.0	28	16.2	0.2	0.3	Insoluble	---	---	---	---	---	---	148-216	<-20	>38



Volatile organic compound (VOC) - MIR concept

“VOC” (volatile organic compound) is a term commonly used in the industry. It is emitted from various sources, such as car exhausts, industrial processes, consumer products, paints and coatings, among others. The coating industry contributes with a small portion of the VOC emissions; however, in the applications, the solvents correspond to the majority of the VOC emissions.

One way to evaluate the VOC and its impact on the environment is by the photochemical reactivity of each VOC. The photochemical reactivity is based on the ozone formation potential of a given VOC under specific atmospheric conditions and nitrogen oxide concentrations, and can be represented by the equation below:



It is possible to evaluate the maximum potential for photochemical reactivity for each VOC. Through this evaluation, maximum incremental reactivity (MIR) is obtained. MIR is expressed in grams of ozone formed per gram of VOC:

$$\text{MIR (g O}_3 \div \text{g VOC)} = \max \left(\frac{\text{O}_3}{\text{VOC mass}} \right)$$

VOCs have different photochemical reactivity, producing more or less ozone. The following graph shows a comparison of the MIR of some solvents.

MIR of different solvents (g O₃ ÷ g VOC)

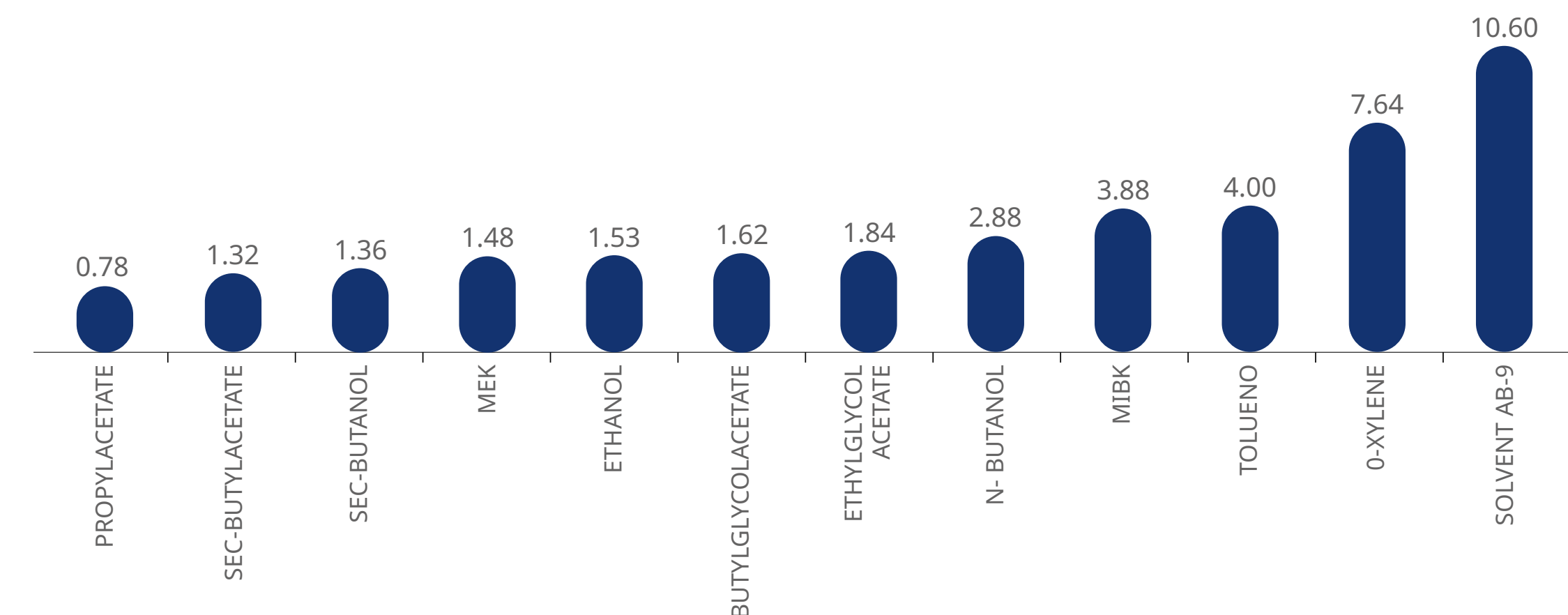


Figure 1 - MIR of several solvents. Source: Easy Guide to Paint Technology. 3. ed. (2023, p 52).



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