

REFERENCE GUIDE TO BIPHASIC SOLVENT SYSTEMS

Composition ratios and phase polarity indices

Arizona · HEMWat · LLIBS by LiLiChro

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SYSTEM FAMILIES

52

MIXTURES

Upper / lower

PHASE POLARITY



SOLVENT RATIOS & PHASE POLARITY

Ratios are reproduced from the supplied workbook. Polarity indices are listed separately for the upper and lower phases.

ARIZONA SYSTEM					23 REFERENCE MIXTURES	
COMPOSITION RATIO					POLARITY INDEX	
SYSTEM	HEPTANE	ETHYL ACETATE	METHANOL	WATER	UPPER	LOWER
Arizona A	0	1	0	1	4.4	9
Arizona B	1	19	1	19	4.18	8.805
Arizona C	1	9	1	9	3.96	8.61
Arizona D	1	4	1	4	3.52	8.22
Arizona F	1	3	1	3	3.3	8.025
Arizona G	1	2	1	2	2.933	7.7
Arizona H	2	3	2	3	2.64	7.44
Arizona J	3	4	3	4	2.514	7.329
Arizona K	4	5	4	5	2.444	7.267
Arizona L	5	6	5	6	2.4	7.227
Arizona M	6	7	6	7	2.369	7.2
Arizona N	1	1	1	1	2.2	7.05
Arizona P	7	6	7	6	2.031	6.9
Arizona Q	6	5	6	5	2	6.873
Arizona R	5	4	5	4	1.956	6.833
Arizona S	4	3	4	3	1.886	6.771
Arizona T	3	2	3	2	1.76	6.66
Arizona U	2	1	2	1	1.467	6.4
Arizona V	3	1	3	1	1.1	6.075
Arizona W	4	1	4	1	0.88	5.88
Arizona X	9	1	9	1	0.44	5.49
Arizona Y	19	1	19	1	0.22	5.295
Arizona Z	1	0	1	0	0	5.1

HEMWAT SYSTEM					16 REFERENCE MIXTURES	
COMPOSITION RATIO					POLARITY INDEX	
SYSTEM	HEXANE	ETHYL ACETATE	METHANOL	WATER	UPPER	LOWER
HEMWat -7	9	1	9	1	0.44	5.49
HEMWat -6	8	2	8	2	0.88	5.88
HEMWat -5	7	3	7	3	1.32	6.27
HEMWat -4	6	4	6	4	1.76	6.66
HEMWat -3	5	5	5	5	2.2	7.05
HEMWat -2	4	6	4	6	2.64	7.44
HEMWat -1	3	7	3	7	3.08	7.83
HEMWat 0	2	8	2	8	3.52	8.22
HEMWat 1	1	9	1	9	3.96	8.61
HEMWat 2	1	1	1	2	2.2	7.7
HEMWat 3	2	3	2	3	2.64	7.44
HEMWat 4	1	1	1	1	2.2	7.05
HEMWat 5	3	2	3	2	1.76	6.66
HEMWat 6	4	1	4	1	0.88	5.88
HEMWat 7	5	1	5	1	0.733	5.75
HEMWat 8	0	10	0	10	4.4	9

HOW TO USE THIS REFERENCE

- Select a plausible solvent family and ratio range.
- Verify phase formation and settling experimentally.
- Measure partitioning before process optimization.
- Confirm phase identity before assigning flow mode.

LLIBS BY LILICHRO					LIQUID-LIQUID ISOLATION BIPHASIC SYSTEM · 13 MIXTURES	
COMPOSITION RATIO					POLARITY INDEX	
#	HEXANE	MTBE	ACETO-NITRILE	WATER	UPPER	LOWER
01	0	100	0	100	2.5	9
02	0	100	10	90	2.5	8.68
03	0	100	20	80	2.5	8.36
04	0	100	25	75	2.5	8.2
05	50	50	30	70	1.25	8.04
06	70	30	40	60	0.75	7.72
07	75	25	50	50	0.625	7.4
08	80	20	75	25	0.5	6.6
09	90	10	80	20	0.25	6.44
10	90	10	90	10	0.25	6.12
11	100	0	100	0	0	5.8
12	100	10	90	0	0	5.47
13	100	25	75	0	0	4.975

LLIBS: PRACTICAL CHARACTERISTICS

- Greater stability at extreme phase-volume ratios; limited mutual dissolution between phases.
- Can substantially shorten separation times.
- Uses lower-cost, industrially available solvents.
- Starting references only; partition coefficient and selectivity remain compound-specific.
- Re-check ratios and phase behavior after changes.

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