Miscibility of Phospholipid Binary Mixtures

Component 1	Component 2	Delta Tc	Miscibility
Phosphatidylcholine: Phosphatidylcholine Mixtures			
12:0 PC	16:0 PC	43	L
12:0 PC	18:0 PC	57	VL
14:0 PC	16:0 PC	17	H
14:0 PC	18:0 PC	31	L-M
14:0 PC	20:0 PC	42	VL
16:0 PC	18:0 PC	14	H
18:1*c*delta^{9}PC	14:0 PC	40	VL
18:1*c*delta^{9}PC	16:0 PC	57	VL
18:1*c*delta^{9}PC	18:0 PC	71	VL
18:1*c*delta^{9}PC	22:0 PC	91	VL
18:1*t*delta^{9}PC	14:0 PC	11	L-M
18:1*t*delta^{9}PC	16:0 PC	28	L-M
18:1*t*delta^{9}PC	18:0 PC	42	L
16:0/18:1*c*delta^{9}PC	16:0 PC	44	VL
16:0/18:1*c*delta^{9}PC	16:0 PC	35	VL
16:0/22:6cccccc PC	16:0 PC	~70	VL
Phosphatidylcholine: Phosphatidylglycerol Mixtures			
12:0 PC	12:0 PG•Na	~0	P
12:0 PC	12:0 PG•½Ca	~75	H
12:0 PC	14:0 PG•Na	25	M-H
12:0 PC	14:0 PG•½Ca	~87	M
12:0 PC	16:0 PG•Na	43	M
12:0 PC	16:0 PG•½Ca	~93	L
14:0 PC	14:0 PG•Na	0	H-P
14:0 PC	14:0 PG•½Mg	~51	H
14:0 PC	14:0 PG•½Ca	~61	H

(table continued)

Miscibility of Phospholipid Binary Mixtures

(table continued)

Component 1	Component 2	Delta Tc	Miscibility
Phosphatidylcholine: Phosphatidylglycerol Mixtures - *cont.*			
14:0 PC	16:0 PG•Na	17	H
14:0 PC	16:0 PG•½Ca	~67	L-M
16:0 PC	14:0 PG•Na	18	H
16:0 PC	14:0 PG•½Ca	44	H
16:0 PC	16:0 PG•Na	0	P
16:0 PC	16:0 PG•½Ca	~50	H
18:0 PC	14:0 PG•Na	32	M
18:0 PC	16:0 PG•Na	14	H
18:0 PC	18:1*c*delta^{9}PG•½Ca	~70	VL
18:0 PC	18:1*t*delta^{9}PG•Na	45	L,complex
18:1*c*delta^{9}PC	16:0 PG•Na	59	VL
18:1*c*delta^{9}PC	16:0 PG•½Ca	107	VL
18:1*c*delta^{9}PC	18:1*c*delta^{9}PG•Na	~0	P
18:1*c*delta^{9}PC	18:1*c*delta^{9}PG•½Ca	~0	H
Phosphatidylcholine:Phosphatidylethanolamine Mixtures			
14:0 PC	14:0 PE	24	M
14:0 PC	16:0 PC	~39	M
14:0 PC	16:1*c*delta^{9}PE	60	VL
14:0 PC	18:1*c*delta^{9}PE	38	VL
16:0 PC	16:0 PE	22	H
16:0 PC	16:1*c*delta^{9}PE	78	VL
16:0 PC	18:1*c*delta^{9}PE	57	VL
18:0 PC	14:0 PE	6	M-H
16:1*c*delta^{9}PC	14:0 PE	84	VL
18:1*c*delta^{9}PC	14:0 PE	65	VL
18:1*c*delta^{9}PC	16:0 PE	79	VL
18:1*t*delta^{9}PC	16:0 PE	50	VL (Fluid immiscibility)

Miscibility of Phospholipid Binary Mixtures

(table continued)

Component 1	Component 2	Delta Tc	Miscibility
Phosphatidylcholine: Phosphatidic Acid Mixtures			
14:0 PC	14:0 PA•NaH	26	M
14:0 PC	14:0 PA•Ca		L-M
16:0 PC	16:0 PA•NaH	25	M
16:0 PC	16:0 PA•Ca,ph	6	No transition <70°
16:0 PC	16:0 PA•Ca,ph	8	VL-L
16:0 PC	16:0 PA:H2	21	M-H
Phosphatidylcholine: Phosphatidylserine Mixtures			
14:0 PC	14:0 PS•Na	15	L
14:0 PC	14:0 PS•Ca		L
14:0 PC	16:0 PS•Na	29	M-H,complex
14:0 PC	18:1*c*delta^{9}PS•Na	~35	L-M
14:0 PC	18:1*c*delta^{9}PS•Ca		VL
18:0 PC	18:1*c*delta^{9}PS•Na	65	VL
18:1*c*delta^{9}PC	14:0 PS•Na	58	VL
Miscellaneous Phospholipid Mixtures			
16:0 PE	18:1*c*delta^{9}PE	76	VL
14:0 PG•Na	16:0 PG•Na	18	H
16:0 PE	18:1*t*delta^{9}PG•Na	51	L
18:1*c*delta^{9}PE	16:0 PG•Na	63	L-M,complex
18:1*c*delta^{9}PE	14:0 PS•Na	53	L
18:1*t*delta^{9}PE	18:1*c*delta^{9}PS•Na	45	L

Miscibility Key

P = Perfect. Ideal mixing and no broadening of the phase transition in the mixture.

H = High. Mixing ideal or very nearly so; phase transitions of mixture are markedly broader than those of the pure components.

M = Moderate. Phase diagram deviates markedly from ideal behavior, but the solidus curve is not flat over any significant range of compositions.

L = Low. Solidus curve in phase diagram is essentially flat over some range of compositions encompassing a region 20-50% wide over the X_B-axis.

VL = Very Low. Solidus curve is essentially flat over most of the range of compositions (along >50% of the X_B-axis).

References: Thermotropic Phase Transitions of Pure Lipids in Model Membranes and Their Modifications by Membrane Proteins, Dr. John R. Silvius. *Lipid-Protein Interactions*. John Wiley & Sons, Inc., New York, 1982. Reprinted with permission from John Wiley & Sons, Inc.