Table 1 Kinetic constants of proton transfer reactions and physical properties measured in hydration layers in phosphatidylcholine multilamellar vesicles.

Sucrose (molal)	0	0.57
Osmotic pressure (dyn/cm^2)	$5 \cdot 10^{5a}$	$1.5 \cdot 10^7$
Width of hydration layer[b] (A)	25	15
Rate constant of reprotonation (M^{-1} s^{-1})	$(5 \pm 1) \cdot 10^{10}$	$(2 \pm 1) \cdot 10^{10}$
Diffusion coefficient of proton (cm^2 s^{-1})	$10 \cdot 10^{-5c}$	$4.4 \cdot 10^{-5c}$
	$2 \cdot 10^{-5d}$	$1 \cdot 10^{-5d}$
Rate constant of ΦO^-, reaction with PC-H (M^{-1} s^{-1})	$(1 \pm 0.5) \cdot 10^9$	$(4 \pm 0.5) \cdot 10^8$
Diffusion coefficient of ΦO^- (cm^2 s^{-1})	$2.2 \cdot 10^{-6c}$	$0.9 \cdot 10^{-6c}$
	$0.5 \cdot 10^{-6d}$	$0.2 \cdot 10^{-6d}$
Viscosity of water in hydration layer (cP)	1.6–7	3–12

[a] Contribution of 0.02 osmol of buffer.

[b] Estimated from the data of Lis et al.[28]

[c] Calculated from the rate constant assuming total electrostatic screening by ions within the hydration layer and $R_0 = 6$ Å.

[d] Calculated from the rate constant assuming no electrostatic screening of the interacting ions and $R_0 = 6$ Å.