

Supplemental Table 2. Irreversible rate constants (k_{obs}) for formation of open complexes as a function of $[\text{RNAP}]_{\text{total}}$ and $[\text{Na}^+]$ in Glu^- and F^- Buffers at 25 °C^a

[Na ⁺] (M)	RNAP (nM)	k_{obs} (s ⁻¹)	Number of determinations
0.23 Glu ⁻	1.25	$(7.3 \pm 0.4) \times 10^{-2}$	2
	2.90	$(8.2 \pm 0.7) \times 10^{-2}$	
	3.16	$(1.0 \pm 0.1) \times 10^{-1}$	
	7.16	$(1.2 \pm 0.1) \times 10^{-1}$	
	8.87	$(1.60 \pm 0.09) \times 10^{-1}$	
	1.63	$(2.0 \pm 0.2) \times 10^{-1}$	
	2.14	$(2.1 \pm 0.1) \times 10^{-1}$	
	4.00	$(1.8 \pm 0.1) \times 10^{-1}$	
	4.29	$(2.1 \pm 0.2) \times 10^{-1}$	
	7.98	$(1.9 \pm 0.1) \times 10^{-1}$	
0.25	1.25	$(5.5 \pm 0.5) \times 10^{-2}$	2
	2.32	$(5.4 \pm 1.0) \times 10^{-2}$	
	3.69	$(1.1 \pm 0.1) \times 10^{-1}$	
	9.48	$(1.4 \pm 0.2) \times 10^{-1}$	
	13.3	$(1.6 \pm 0.1) \times 10^{-1}$	
	14.4	$(1.7 \pm 0.2) \times 10^{-1}$	
	26.6	$(1.8 \pm 0.1) \times 10^{-1}$	
	51.9	$(1.9 \pm 0.1) \times 10^{-1}$	
0.27	3.14	$(4.6 \pm 0.3) \times 10^{-2}$	2
	5.79	$(5.1 \pm 0.6) \times 10^{-2}$	
	7.39	$(8.5 \pm 1.0) \times 10^{-2}$	
	13.7	$(9.6 \pm 0.7) \times 10^{-2}$	
	18.9	$(1.3 \pm 0.1) \times 10^{-1}$	
	20.5	$(1.4 \pm 0.2) \times 10^{-1}$	
	37.8	$(1.4 \pm 0.1) \times 10^{-1}$	
	39.2	$(1.5 \pm 0.1) \times 10^{-1}$	
	62.8	$(1.8 \pm 0.1) \times 10^{-1}$	
	65.0	$(1.8 \pm 0.1) \times 10^{-1}$	
0.29	2.95	$(3.3 \pm 0.3) \times 10^{-2}$	2
	7.85	$(7.0 \pm 0.6) \times 10^{-2}$	
	8.01	$(6.8 \pm 0.4) \times 10^{-2}$	
	14.7	$(1.1 \pm 0.1) \times 10^{-1}$	
	16.5	$(9.9 \pm 1.1) \times 10^{-2}$	
	30.8	$(1.4 \pm 0.1) \times 10^{-1}$	
	32.9	$(1.3 \pm 0.1) \times 10^{-1}$	
58.7	$(1.6 \pm 0.1) \times 10^{-1}$		

	62.8	$(1.3 \pm 0.1) \times 10^{-1}$	
0.34	7	$(2.0 \pm 0.7) \times 10^{-2}$	2
0.38	7	$(1.4 \pm 0.4) \times 10^{-2}$	
0.42	7	$(2.1 \pm 0.3) \times 10^{-3}$	
0.46	7	$(2.5 \pm 1.3) \times 10^{-3}$	3
0.55	7	$(7.3 \pm 3.4) \times 10^{-4}$	2
0.64	7	$(1.9 \pm 1.1) \times 10^{-4}$	2
F			
0.37	7	$(9.5 \pm 0.x) \times 10^{-3}$	
0.45	7	$(1.6 \pm 0.x) \times 10^{-3}$	
0.50	7	$(9.9 \pm 0.x) \times 10^{-4}$	
0.63	7	$(4.1 \pm 0.x) \times 10^{-3}$	

^aConcentrations of RNAP are active. Values of k_{obs} determined by fitting the fraction of promoter DNA bound in open complexes as a function of time to eq 1. Unless noted otherwise, k_{obs} was determined once for each [RNAP]; associated error is from the fitting program. Otherwise, the reported error is calculated from the standard deviation ($\delta(n-1)$) of multiple values of k_{obs} . Values of k_{obs} for $[\text{Na}^+] \leq 0.29 \text{ M}$ were determined using rapid quench mixing; manual mixing was used to determine k_{obs} for $[\text{Na}^+] > 0.29 \text{ M}$.