$$\alpha^{\text{no Helium}}_{\text{CI(2–1)}} = 3.06 \times [(\tau_{\text{CI(2–1)}} / (1 - e^{-\tau_{\text{CI(2–1)}}}))]$$
$$\text{Approx.} = [0.22\,(T_{\text{kin}}/80)^{-1.0} + 3.1] \times (3 \times 10^{-4} \times 0.2)/([\text{CI}/\text{H}_2])$$