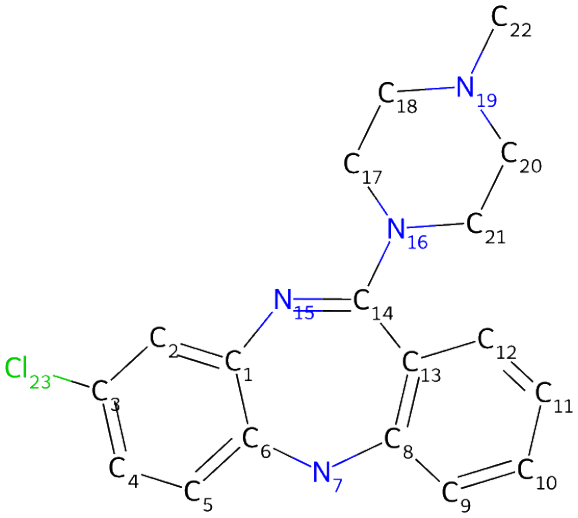
C-oxidation BDE Energy Report for: 089_clozapine-out

This report covers the results for bond dissociation enthalpies (BDE) and solvent accessible surface area (SASA) calculations performed for 089_clozapine-out. Oxidation propensity is established using C-H BDE. The lower the C-H BDE values the higher the propensity for C-oxidation. Details for the density functional theory (DFT) calculations and overall workflow are explained at the end of this document.

BDE and SASA

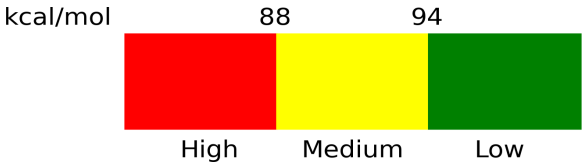


Atom	BDE (kcal/mol)	Propensity	SASA (Å²)
C2	115.04	Low	13.39
C4	114.09	Low	15.23
C5	111.86	Low	13.94
C9	112.78	Low	13.15
C10	112.07	Low	16.30
C11	113.09	Low	14.30
C12	111.7	Low	7.99
C17	92.77	Moderate	0.52
C18	91.89	Moderate	1.40
C20	91.53	Moderate	1.32
C21	90.75	Moderate	0.84
C22	93.0	Moderate	7.30

Missing Sites:

None

Risk Scale:



Calculation Details

Conformational search calculations were performed only for the base ground state molecule. The lowest energy conformer was selected to generate radicals and run optimization DFT calculations. DFT calculations were performed using Gaussian with B3LYP level of theory and 6-31G(d,p) basis set. The BDE protocol was adapted from: *Lienard, P., Gavartin, J., Boccardi, G., & Meunier, M. (2015). Predicting drug substances autoxidation. Pharmaceutical research, 32, 300-310.*