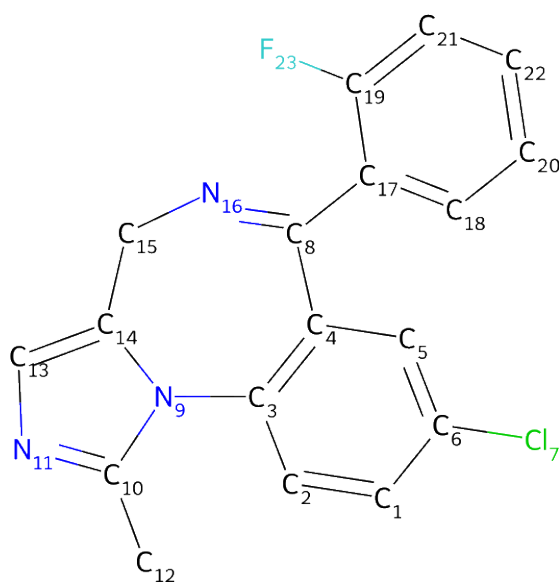


C-oxidation BDE Energy Report for: 200_midazolam-out

This report covers the results for bond dissociation enthalpies (BDE) and solvent accessible surface area (SASA) calculations performed for 200_midazolam-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 (Å ²)
C1	114.13	Low	13.68
C2	112.09	Low	6.42
C5	113.24	Low	4.88
C12	87.12	High	7.63
C13	116.75	Low	20.73
C15	73.4	High	2.32
C18	113.72	Low	7.94
C20	113.21	Low	15.53
C21	115.0	Low	15.44
C22	112.72	Low	16.52

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.*