# 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
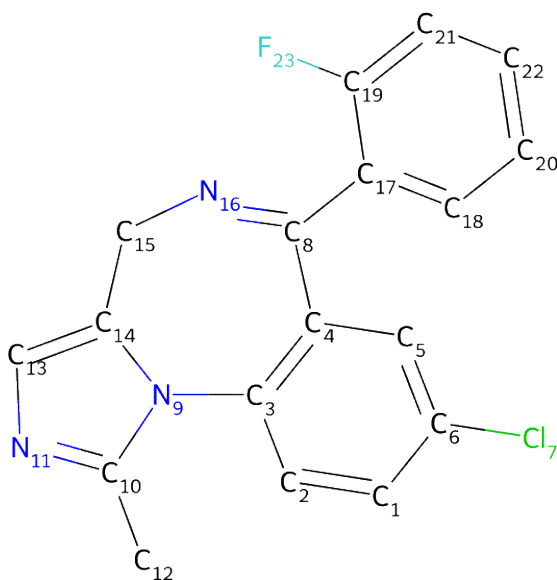
Atom	BDE (kcal/mol)	Propensity
C1	114.13	Low
C2	112.09	Low
C5	113.24	Low
C12	87.12	High
C13	116.75	Low
C15	73.4	High
C18	113.72	Low
C20	113.21	Low
C21	115.0	Low
C22	112.72	Low

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.*