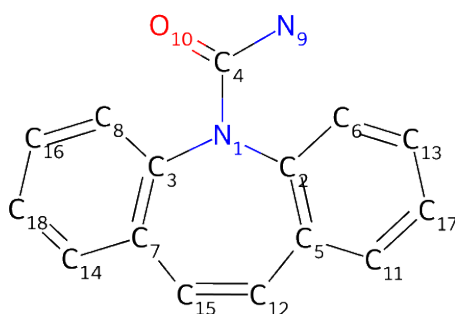


# C-oxidation BDE Energy Report for: 015\_CARBAMAZEPINE-out

This report covers the results for bond dissociation enthalpies (BDE) and solvent accessible surface area (SASA) calculations performed for 015\_CARBAMAZEPINE-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 <sup>2</sup> )
C6	113.23	Low	20.77
C8	113.26	Low	19.93
C11	112.24	Low	27.14
C12	108.04	Low	26.93
C13	112.49	Low	35.90
C14	112.23	Low	27.11
C15	107.48	Low	26.94
C16	112.43	Low	35.82
C17	112.65	Low	35.78
C18	112.62	Low	35.89

### 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.*