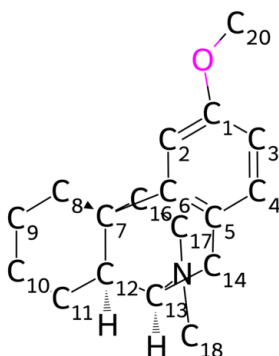


# C-oxidation BDE Energy Report for: 109\_dextromethorphan-out

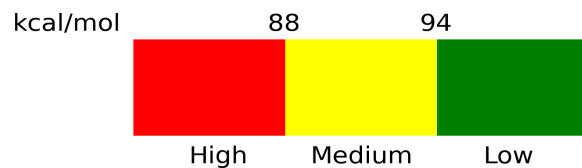
This report covers the results for BDE calculations performed for: 109\_dextromethorphan-out. Oxidation propensity is established using C-H Bond Dissociation Enthalpies (BDE). The lower the C-H BDE values the higher the propensity for C-oxidation. Details for the DFT calculations and overall workflow are explained at the end of this document

## Bond Dissociation Energies (kcal/mol)



Atom	BDE (kcal/mol)	Propensity
C2	111.94	Low
C3	111.98	Low
C4	111.25	Low
C8	97.17	Low
C9	98.09	Low
C10	98.02	Low
C11	97.25	Low
C12	97.31	Low
C13	96.04	Low
C14	83.08	High
C16	98.46	Low
C17	89.35	Moderate
C18	90.78	Moderate
C20	96.62	Low

Risk Scale:



## Calculation details and output files

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.*