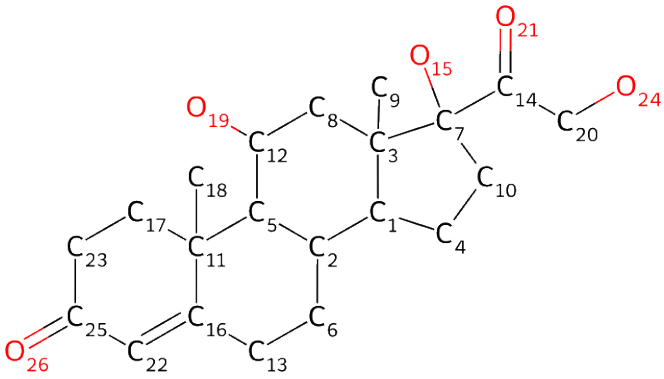
C-oxidation BDE Energy Report for: 018_CORTISOL-out

This report covers the results for bond dissociation enthalpies (BDE) and solvent accessible surface area (SASA) calculations performed for 018_CORTISOL-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

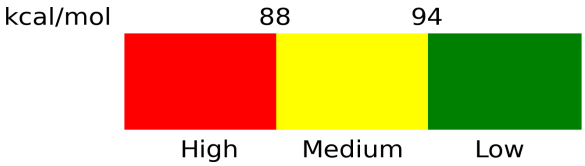


Atom	BDE (kcal/mol)	Propensity	SASA (Å²)
C1	94.26	Low	6.31
C2	91.11	Moderate	1.11
C4	95.22	Low	18.47
C5	90.15	Moderate	4.34
C6	96.69	Low	16.75
C8	97.96	Low	10.32
C9	100.94	Low	17.07
C10	96.24	Low	17.53
C12	88.7	Moderate	3.24
C13	80.78	High	20.04
C17	98.22	Low	10.98
C18	100.74	Low	18.95
C20	75.06	High	21.52
C22	111.55	Low	23.42
C23	89.18	Moderate	21.32

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.*