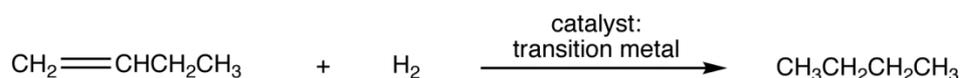


Heat of hydrogenation (symbol:  $\Delta H_{\text{hydro}}$ ,  $\Delta H^\circ$ ) of an unsaturated compound is the standard enthalpy of catalytic hydrogenation of this unsaturated compound. For example (with alkenes) :

Catalytic hydrogenation of an alkene is always exothermic. Therefore, heat of hydrogenation of alkenes is always negative.

eg:



Standard enthalpy of this reaction is  $-30.3 \text{ kcal mol}^{-1}$ . Thus, heat of hydrogenation of 1-butene is  $-30.3 \text{ kcal mol}^{-1}$ .

Heat of hydrogenation of alkenes is a measure of the stability of carbon-carbon double bonds. All else being the same, the smaller the numerical value of heat of hydrogenation of an alkene, the more stable the double bond therein. Based on heats of hydrogenation of alkenes, the trend in the stability of carbon-carbon double bonds is tetrasubstituted > trisubstituted > disubstituted > monosubstituted > unsubstituted.