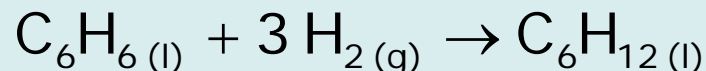


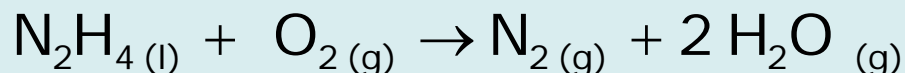
Enthalpy changes: exercises

1. Calculate the enthalpy change of hydrogenation of benzene to cyclohexane:



Standard enthalpy changes of combustion in kJ/mol: benzene -3267 , hydrogen -286 , cyclohexane -3920

2. Hydrazine, $\text{N}_2\text{H}_4(\text{l})$, is used as a rocket fuel. It burns in oxygen to produce nitrogen and steam:



a) Calculate the enthalpy change when 1 mole of hydrazine burns.

Standard enthalpy changes of formation (in kJ/mol): hydrazine $+50.6$, $\text{H}_2\text{O}(\text{g})$ -242

b) How much heat is evolved if 1 tonne of hydrazine burns completely in this way? (H=1; N=14; 1 tonne=1000 kg)

Enthalpy changes: exercises

3. Calculate the enthalpy change of formation of bromoethane, $C_2H_5Br_{(l)}$ from the following data

