Answer on Question #78253, Chemistry/General Chemistry

What is the ΔHo of the equation $2C_6H_6(l) + 15O_2(g) \rightarrow 12CO_2(g) + 6H_2O(g)$? Given: ΔHfo C_6H_6 =49.00 kJ/mol, ΔHfo CO_2 = -394 kJ/mol, ΔHfo H_2O =-242 kJ/mol.

A. ΔHo=-6,082 kJ
B. ΔHo=-6,278 kJ
C. ΔHfo=-6,082 kJ
D. ΔHfo=-6,278 kJ
E. ΔHfo=6,278 kJ

Solution

$\Delta Ho = \Sigma n_p \times \Delta Hfo(products) - \Sigma n_r \times \Delta Hfo(reactants)$

$\Delta Hfo(O_2) = 0$

$\Delta Ho = [6 \times \Delta Hfo(H_2O) + 12 \times \Delta Hfo(CO_2)] - [2 \times \Delta Hfo(C_6H_6) + 15 \times \Delta Hfo(O_2)] =$

$=[6 \times (-242) + 12 \times (-394)] - [2 \times 49 + 15 \times 0] = -6278$ (kJ)

Answer: B. ΔHo = -6,278 kJ