Using standard Heats of formation, calculate the standard Enthalpy change for the following reaction.

$H_2(g)+F_2(g)$—->$2HF(g)$

Solution:

1.$\Delta H_{f,298}^{o}(H_{2(g)})=436\frac{kJ}{mol}$;

$\Delta H_{f,298}^{o}(F_{2(g)})=159\frac{kJ}{mol}$;

$\Delta H_{f,298}^{o}(HF_{(g)})=566\frac{kJ}{mol}$.

2. $\Delta H_{substance}=\sum \Delta H_{products}-\sum \Delta H_{reagents}$

3. $\sum \Delta H_{reagents} = \Delta H(H_{2(g)}) + \Delta H(F_{2(g)})$;

$\sum \Delta H_{reagents} = 436 + 159 = 595\frac{kJ}{mol}$.

4.$\sum \Delta H_{products} = 2 \times \Delta H(HF)$;

$\sum \Delta H_{products} = 2 \times 566 = 1132\frac{kJ}{mol}$.

5. $\Delta H_{substance}=1132-595=537\ \frac{kJ}{mol}$.

Answer: . $\Delta H_{substance}=+537\frac{kJ}{mol}$.