

5/30a

$$\text{C}_6\text{H}_5\text{OH} + 7\text{O}_2 \rightarrow 6\text{CO}_2 + 3\text{H}_2\text{O} \checkmark$$

1.85
12 ox + 3 ox
15 ox

Heat Capacity $\frac{11.66\text{J}}{^\circ\text{C}}$

21.36°C → 26.37°C
 $\Delta T = 5.01^\circ\text{C}$ Endo

Find ^{exen} heat of combustion
Per gram phenol

$\frac{\text{J}}{\text{g phenol}}$

11.66J	5.01	1.8g phenol	=	32.45J/g phenol
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32450 J/g phenol

Oct 26-8:10 AM

Specific Heat

 $Q = m c \Delta T$
 $c = \frac{Q}{m \Delta T}$

$\frac{\text{J}}{\text{g} \cdot ^\circ\text{C}}$

Molar Specific heat

$\frac{\text{J}}{\text{mole} \cdot ^\circ\text{C}}$

Heat Capacity

$\frac{\text{J}}{^\circ\text{C}}$

Temp → Always ΔT

Oct 26-8:22 AM

Endo

$A + \underline{100\text{KJ}} \rightarrow B$

React.
"Gozinta"
Heat enters the rxn
REACTANT

Exo

$C \rightarrow D + \underline{100\text{J}}$

Heat released as
"Gozata" product

Oct 26-8:26 AM

① $N_2 + O_2 \rightarrow 2NO$ $\Delta H + 180.7 \text{ KJ}$
 ② $2NO + O_2 \rightarrow 2NO_2$ $\Delta H - 113.1 \text{ KJ}$
 ③ $2N_2O \rightarrow 2N_2 + O_2$ $\Delta H - 163.2 \text{ KJ}$

Wanted: $N_2O + NO_2 \rightarrow 3NO$ Hess's Law

③ $N_2O \rightarrow N_2 + \frac{1}{2}O_2$
 ② $NO_2 \rightarrow NO + \frac{1}{2}O_2$
 ① $\frac{1}{2}N_2 + \frac{1}{2}O_2 \rightarrow NO$

$\Delta H = -\frac{1}{2}(163.2)$
 $\Delta H = +\frac{1}{2}(113.1)$
 $\Delta H = \textcircled{+}180.7$

$N_2O + NO_2 \rightarrow 3NO$ $\Delta H = 155.65 \text{ KJ}$

Abs Heat Evol
Non-Spat

Oct 26-8:31 AM

Enthalpy of Formation p 189 ALSO
p 1112-1114 Appendix B

ΔH_f

To, Two, Too
There, Their, They're

→ Amt energy to form
product from reactants
in that rxn
(eqn)

$$\Delta H = \left[\sum n \Delta H_{\text{product}} \right] - \left[\sum n \Delta H_{\text{reactants}} \right]$$

Balanced eqn
Coefficients
Mole

Oct 26-8:56 AM

Find Enthalpy of formation of p 1112-1114 App. B

react.
Prod

$$\text{C}_3\text{H}_8(\text{g}) + 5\text{O}_2(\text{g}) \rightarrow 3\text{CO}_2(\text{g}) + 4\text{H}_2\text{O}(\text{l})$$

$$\Delta H = \left[\sum n \Delta H_{\text{prod}} \right] - \left[\sum n \Delta H_{\text{react.}} \right]$$

$$\Delta H = \left[3(-393.5) + 4(-285.83) \right] - \left[1(-103.85) + 5(0) \right]$$

$$\Delta H = -2219.97 \text{ kJ/Mole}$$

Oct 26-9:01 AM

A TRUE Heat of formation Definition

* Form 1 mole of product from its elements *

Oct 26-9:16 AM

Mixing Problems $\left\{ \begin{array}{l} \text{5g Fe } 100^\circ \rightarrow \text{Boiling H}_2\text{O} \\ \text{50ml H}_2\text{O at } 25^\circ \text{C} \end{array} \right\}$ Find sp. Hl. of Fe
 (Final Temp 28°)

Heat Lost = Heat gained

$$m C \Delta T = m C \Delta T$$

$$(5g)(C)(100 - 28) = (50g) \left(\frac{4.18 \text{ J}}{g \cdot ^\circ\text{C}} \right) \left(\frac{28 - 25}{3g} \right)$$

$$C = \frac{1.74 \text{ J}}{g \cdot ^\circ\text{C}}$$

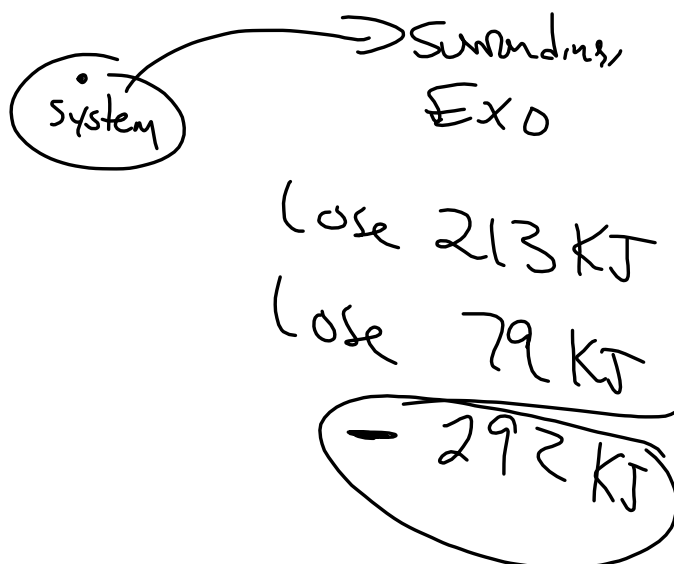
Oct 26-9:18 AM

PS 5-1 J = kg $\frac{m^2}{sec^2}$

① $KE = \frac{1}{2} m v^2$
 $= \frac{1}{2} (9.11 \times 10^{-31} \text{ kg}) (6 \times 10^6)^2$
 $= 1.64 \times 10^{-17} \text{ J}$

Oct 26-9:25 AM

②



Oct 26-9:29 AM

HW PS S-1 (1995)
→ 1 → 16, 18, 21

Oct 26-9:30 AM