

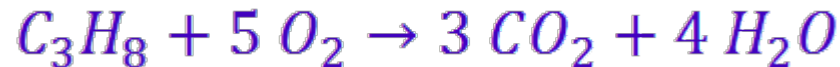
Expansion following combustion

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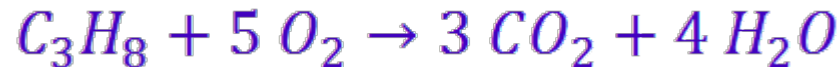


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$$\Delta n_{\text{gas}} = \sum n_{\text{products}} - \sum n_{\text{reactants}}$$

$$\Delta n_{\text{gas}} = 3 + 4 - 1 - 5 = 1$$

Expansion following combustion

What volume of gas is produced if 50 grams of C_3H_8 is combusted? ($T = 373\text{ K}$ and $P = 1\text{ atm}$)

Solution: Calculate how many moles are in 50 grams of C_3H_8 .

$$n = \frac{m}{M_m} = \frac{50\text{ gm}}{44\text{ gm/mol}} = 1.14\text{ mol}$$

Then use the ideal gas law to obtain the volume change.

$$\Delta V = \frac{\Delta nRT}{P} = \frac{(1.14\text{ mol}) \left(0.08206 \frac{\text{Latm}}{\text{molK}}\right) (373\text{ K})}{1\text{ atm}}$$

$$\Delta V = 34.8\text{ L}$$