

Oppgave: Hvor mange etanolmolekyler
blir det i hver liter i havet

4cl etanol inneholder 0,685 mol

Antall molekyler blir:

$$0,685 [\text{mol}] \cdot 6,022 \cdot 10^{23} [\text{1/mol}]$$

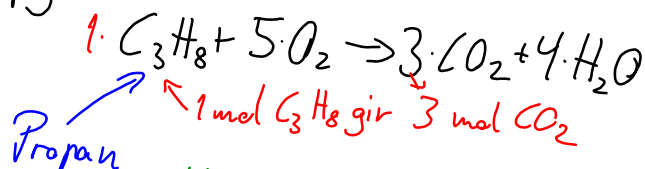
$$= 4,124 \cdot 10^{23} \text{ molekyler}$$

av etanol i 4,0 cl

Antall molekyler pr liter i havet

$$\frac{4,124 \cdot 10^{23} \text{ molekyler}}{1,37 \cdot 10^{21} \text{ ltr}} \approx 301 \frac{\text{molekyler}}{\text{ltr}}$$

↑
i alle verdens hav

Oppgave

Massen til et propanmolekyl:

$$3 \cdot \text{C} = 3 \cdot 12,011 = 36,033$$

$$8 \cdot \text{H} = 8 \cdot 1,008 = 8,064$$

$$\underline{\hspace{10em}} \\ 44,097 [\text{u}]$$

$$\text{Propan: } 44,10 \left[\frac{\text{g}}{\text{mol}} \right]$$

Hvor mange mol er det; 1,0 ltr propan

$$0,508 \frac{\text{g}}{\text{cm}^3} = 0,508 \frac{\text{g}}{10^{-3} \text{ ltr}} = 508 \frac{\text{g}}{\text{ltr}}$$

$$\rightarrow \text{cm}^3 \rightarrow \left[\underset{\substack{\uparrow \\ \text{cm}}}{10^{-2} \text{ m}} \right]^3 = (10^{-2})^3 [\text{m}]^3 = 10^{-6} \left[\underset{\substack{\uparrow \\ 10^3 \text{ ltr}}}{\text{m}^3} \right]$$

$$10^{-6} [10^3 \text{ ltr}] = 10^{-3} \text{ ltr}$$

$$1 \text{ cm}^3 = 10^{-3} \text{ ltr}$$

Antall mol i en ltr propan:

$$\frac{508 \text{ g}}{44,10 \text{ g/mol}} = 11,52 \text{ mol} \rightarrow \text{i 1 ltr propan}$$

$$\text{Antall mol CO}_2: 3 \cdot 11,52 \text{ mol} = 34,56 \text{ mol}$$

Massen til CO_2 :

$$\text{C} = 12,011 = 12,011$$

$$2 \cdot \text{O} = 2 \cdot 16,00 = 32,000$$

$$\underline{\hspace{10em}} \\ 44,011 [\text{u}] \leftarrow \text{ett CO}_2 \text{ molekyl}$$

$$\text{CO}_2: 44,01 \left[\frac{\text{g}}{\text{mol}} \right]$$

Vi har 34,56 mol:

$$\text{Det gir: } 34,56 [\text{mol}] \cdot 44,01 \left[\frac{\text{g}}{\text{mol}} \right] = 1520,95 [\text{g}]$$

$$\approx 1521 [\text{g}]$$

$$= 1,521 [\text{kg}] \text{ CO}_2$$

2) Hvor mange mol er det; 11,0 kg propan:

$$\text{Propan: } 44,10 \left[\frac{\text{g}}{\text{mol}} \right]$$

Antall mol i 11,0 kg propan:

$$\frac{11000 [\text{g}]}{44,10 \left[\frac{\text{g}}{\text{mol}} \right]} = \underline{249,45 \text{ mol}}$$

1 mol propan gir 3 mol CO_2

Antall mol CO_2 som blir dannet da 11,0 kg propan forbrenner:

$$3 \cdot 249,45 \text{ mol} = 748,35 \text{ mol}$$

$$\text{Det gir: } 44,01 \left[\frac{\text{g}}{\text{mol}} \right] \cdot 748,35 [\text{mol}] = 32934,15 \text{ g}$$

\uparrow
 CO_2

$$= \underline{32934 [\text{kg}]}$$