Answer on Question #72669, Chemistry / General Chemistry :

Determine the mass of water (in g) produced from the complete combustion of 6.97×10^{-2} g of $C_2H_6O_2$ with excess oxygen.

Solution.

$$m\left(C_2H_6O_2\right)=6.97\cdot10^{-2}g=0.0697g$$
$$M\left(C_2H_6O_2\right)=62g/mol$$

$$m\left(H_2O\right)-?$$

Reaction equation:

$$2C_2H_6O_2+5O_2\rightarrow4CO_2+6H_2O$$

Amount of ethanol:

$$v\left(C_2H_6O_2\right)=\frac{m\left(C_2H_6O_2\right)}{M\left(C_2H_6O_2\right)}=\frac{0.0697g}{62g/mol}=0.001124mol$$

Water:

$$v\left(H_2O\right)=\frac{5}{2}v\left(C_2H_6O_2\right)=\frac{5}{2}\cdot0.001124mol$$
$$v\left(H_2O\right)=0.00281mol$$

Mass of water (in g):

$$m\left(H_2O\right)=0.00281mol\cdot18g/mol$$
$$m\left(H_2O\right)=0.0506g$$

Answer: $m\left(H_2O\right)=0.0506g$ **.**