

**Answer on Question #72669, Chemistry / General Chemistry :**

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

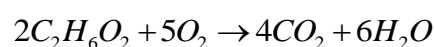
**Solution.**

$$m(C_2H_6O_2) = 6.97 \cdot 10^{-2} \text{ g} = 0.0697 \text{ g}$$

$$M(C_2H_6O_2) = 62 \text{ g / mol}$$

$$m(H_2O) = ?$$

Reaction equation:



Amount of ethanol:

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

Water:

$$v(H_2O) = \frac{5}{2} v(C_2H_6O_2) = \frac{5}{2} \cdot 0.001124 \text{ mol}$$

$$v(H_2O) = 0.00281 \text{ mol}$$

Mass of water (in g):

$$m(H_2O) = 0.00281 \text{ mol} \cdot 18 \text{ g / mol}$$

$$m(H_2O) = 0.0506 \text{ g}$$

**Answer:**  $m(H_2O) = 0.0506 \text{ g}$  .

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