Answer on Question #54692 – Chemistry – General Chemistry

Question

Given 7.10 g of butanoic acid and excess ethanol, how many grams of ethyl butyrate would be synthesized, assuming a complete 100% yield?

Answer:

The reaction between butanoic acid and ethanol:

$$CH_3CH_2CH_2COOH + C_2H_5OH = CH_3CH_2CH_2COOC_2H_5 + H_2O$$

The mass of ethyl butyrate which would be synthesized (if yield is 100 %):

$$m(CH_3CH_2CH_2COOC_2H_5) = \frac{m(CH_3CH_2CH_2COOH)}{M(CH_3CH_2CH_2COOH)} \cdot M(CH_3CH_2CH_2COOC_2H_5) =$$

$$m(CH_3CH_2CH_2COOC_2H_5) = \frac{7.10}{88.11} \cdot 116.16 = 9.36\ g$$

Answer: 9.36 g