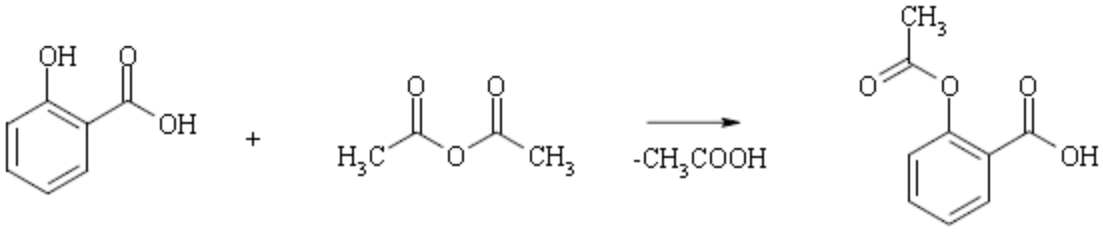
Answer on Question 61752, Chemistry / Inorganic Chemistry

Question:

What mass of acetic anhydride is needed to completely consume 1.00×10^2 salicylic acid?

Solution:

The chemical reaction occurs:



1 mol 1 mol 1 mol

The number of moles of the salicylic acid:

$$n(C_7H_6O_3) = \frac{m(C_7H_6O_3)}{M(C_7H_6O_3)} = \frac{100g}{138.1g/mol} = 0.725mol$$

The number of moles of the salicylic acid acetic anhydride is the same, so the mass of the acetic anhydride:

$$m(C_4H_6O_3) = n(C_4H_6O_3) \times M(C_4H_6O_3) = 0.725mol \times 102.1g/mol = 73.99g$$

Answer: 73.99 g