Answer on Question #40466, Chemistry, Other

Question

In the following reaction, how many grams of sulfuric acid, H_2SO_4, will be needed to react with 87.3 g of sodium hydroxide, NaOH?
$2NaOH + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2O$

Answer

Stoichiometric ratio:
$n(H_2SO_4):n(NaOH) = 1:2 = 0.5$

Mass ratio:
$m(H_2SO_4):m(NaOH) = [M(H_2SO_4)\cdot n(H_2SO_4)]:[M(NaOH) \cdot n(NaOH)] = [M(H_2SO_4)/ M(NaOH)] \cdot [n(H_2SO_4):n(NaOH)] = [98/40] \cdot 0.5 = 1.225$

$m(H_2SO_4):m(NaOH) = 1.225$; $m(H_2SO_4) = 1.225 \cdot m(NaOH) = 1.225 \cdot 87.3$ g = 106.9 g.
Answer: 106.9 g