Answer on Question #81787 – Chemistry – Inorganic Chemistry

What is the maximum mass of S_8 that can be produced by combing 87.0 g of each reactant?

Solution:

$8SO_2 + 16H_2S \rightarrow 3S_8 + 16H_2O$

Find the limiting reactant

mass of reactant / molar mass of reactant $\times$ mole ratio $\times$ molar mass of product

82.0 g SO_2 / 48 g/mol $\times$ (3 mol S_8 / 8 mol SO_2) $\times$ 256 g/mol S_8 = 164 g S_8

82.0 g H_2S / 34 g/mol $\times$ (3 mol S_8 / 16 mol H_2S) $\times$ 256 g/mol S_8 = 116 g S_8

H_2S is the limiting reactant, so you cannot make more than this reactant will produce

$m(S_8)$ = 116 g