

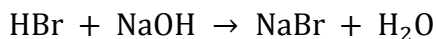
## Answer on Question #54536 – Chemistry – General chemistry

### Question:

What is the theoretical yield of sodium bromide formed from the reaction of 0.81g of hydrobromic acid and 0.19 of sodium hydroxide?

### Solution:

The reaction formula is



Molar mass of hydrobromic acid

$$\text{HBr} = 1 + 79.9 = 80.9 \text{ g/mole}$$

Molar mass of sodium hydroxide

$$\text{NaOH} = 23 + 16 + 1 = 40 \text{ g/mole}$$

Molar mass of sodium sodium bromide

$$\text{NaBr} = 23 + 79.9 = 102.9 \text{ g/mole}$$

From the equation you see that you need  $80.9/40=2.02$  more HBr than NaOH

As the amount of HBr/NaOH is in your case  $0.81/0.19=4.26$  you see that NaOH is limiting reactant.

So mass (the theoretical yield) of NaBr produced is

$$m = \frac{0.19 \text{ g}}{40 \text{ g/mole}} \times 102.9 \frac{\text{g}}{\text{mole}} = 0.489 \text{ g} \approx 0.49 \text{ g}$$

**Answer:** 0.49 g.