

Law of Conservation of Mass: In a chemical reaction, the total mass of reactants always equals the total mass of products.

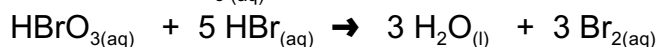
1. The decomposition of 500.00 g of Na_3N produces 323.20 g of N_2 . How much Na is produced in this decomposition?
2. What mass of oxygen is needed to react with 6.49 g of aluminum to produce 12.26 g of aluminum oxide?
3. To produce 90.1 g of water, what mass of hydrogen gas is needed to react with 80.0 g of oxygen?
4. If 3.55 g of chlorine reacts with exactly 2.29 g of sodium, what mass of NaCl will be produced?

Percent Yield (p. 138)

Define: Actual yield _____
Theoretical Yield _____

$$\text{Percentage Yield} = \frac{\text{Actual Yield}}{\text{Theoretical Yield}} \times 100\%$$

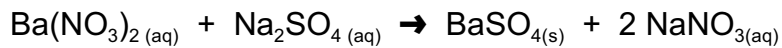
5. 20.0 g of bromic acid, $\text{HBrO}_3(\text{aq})$, is reacted with excess HBr.



(a) What is the theoretical yield of Br_2 for this reaction?

(b) If 47.3 g of Br_2 are produced, what is the percentage yield of Br_2 ?

6. Barium sulfate forms as a precipitate in the following reaction:

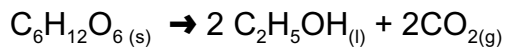


When 35.0 g of $\text{Ba}(\text{NO}_3)_2$ are reacted with excess Na_2SO_4 , 29.8 g of BaSO_4 are recovered by the chemist.

(a) Calculate the theoretical yield of BaSO_4 .

(b) Calculate the percentage yield of BaSO_4 .

7. Yeasts can act on a sugar, such as glucose, $\text{C}_6\text{H}_{12}\text{O}_6$, to produce ethyl alcohol, $\text{C}_2\text{H}_5\text{OH}$, and carbon dioxide.



If 223 g of ethyl alcohol are recovered after 1.63 kg of glucose react, what is the percentage yield of the reaction?