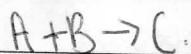


Yield - the amount of product produced by a chemical reaction.

A new substance is made when two reactants react to make a product:



Percentage yield compares the amount of product that the reaction really produces with the maximum amount that it could possibly produce:

$$\text{Percentage yield} = \frac{\text{amount of product produced}}{\text{maximum amount of product possible}} \times 100\%$$

Very few chemical reactions have 100% yield because:

- The reaction may be reversible
- some reactants may react to give unexpected products.
- some of product may be left in apparatus.
- reactants
- some reactions produce more than one product that may be difficult to separate.

Atom economy

The amount of starting materials that end up as useful products is called the ATOM ECONOMY. Try to achieve maximum atom economy.

$$\text{Percentage atom economy} = \frac{\text{relative formula mass of useful product}}{\text{relative formula mass of all products}} \times 100$$

The sign $\rightleftharpoons$ is called the equilibrium sign.

An equilibrium is a closed system where no reactants or products can get in or out. As more products are made the rate they get converted back into products reactants increases. Backward reaction increases, the forward reaction decreases.

Ammonia NH₃

- colourless gas
- sharp, unpleasant smell.
- soluble in water
- floats in air

• Turns damp litmus paper blue - alkali solution when dissolved in water.

- nitrogen and hydrogen at high temperatures pressures and with an iron catalyst form ammonia.
- used to manufacture fertilizers, dyes, explosives and medicine