Interpreting Chemical Equations

The Bromfield School

Honors Chemistry

Ammonia

- Widely used as a fertilizer
- Produced industrially by the reaction of nitrogen with hydrogen:
  - $N_2(g) + 3H_2(g) \rightarrow 2\ NH_3(g)$

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- Considering atoms:

$$N_2(g) + 3H_2(g) \rightarrow 2\ NH_3(g)$$

- On a particle level:

$$N_2(g) + 3H_2(g) \rightarrow 2\ NH_3(g)$$

- On a mole level:

$N_2(g) + 3H_2(g) \rightarrow 2\ NH_3(g)$

- On a mole level:
  - One mole of nitrogen molecules reacts with three moles of hydrogen molecules to form two moles of ammonia molecules

$N_2(g) + 3H_2(g) \rightarrow 2\ NH_3(g)$

- Mass level:

Conservation

- Only mass and atoms are conserved in every chemical reaction!

$N_2(g) + 3H_2(g) \rightarrow 2\ NH_3(g)$

- At STP, one mole of a gas occupies 22.4L.
- Volume level: