

Chemical profile – Ammonium Sulfide

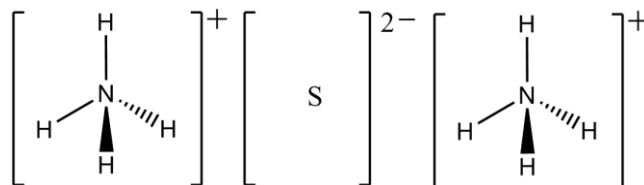
Basic information

IUPAC name: Ammonium sulfide

Other names: Diammonium sulfide

Molecular formula: H₈N₂S

Molecular weight: 68.14 g mol⁻¹



Physical properties

Appearance: Yellow crystalline solid (below -18 °C), sold as a yellow, aqueous solution

Relative density: 1.00 g cm⁻³

Melting point: Not available

Boiling point: 40 °C

Flash point: 20 °C – closed cup



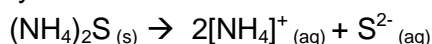
Occurrence and uses

In addition to its use in stink bombs, ammonium sulfide is used in photographic developing, textile manufacturing to apply patina to bronze and in trace metal analysis.

Links to curriculum

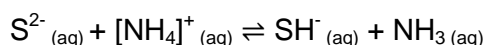
Equilibria, acids and bases:

Ammonium sulphide completely dissociates in water: \rightleftharpoons

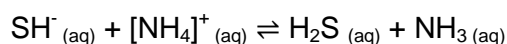


However very little S²⁻ is present in solution as the S²⁻ ion is very basic ($K_b = 1 \times 10^5$).

For water $\text{p}K_a = 15.7$ and for the ammonium ion $\text{p}K_a = 9.2$ so the ammonium ion is a better proton donor than water:



Aqueous solutions of ammonium sulfide are smelly due to the release of hydrogen sulfide and ammonia:



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