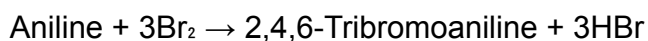


Bromination of Aniline and Formation of Substituted Derivative

Reaction

Aniline reacts with bromine water to form 2,4,6-tribromoaniline as a white precipitate.

Chemical Equation



Observation

- Immediate formation of a white precipitate
 - Decolorization of bromine water
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Explanation

- The amino ($-\text{NH}_2$) group in aniline is a strong activating group
- It increases electron density in the benzene ring
- Directs electrophilic substitution to the ortho and para positions

- Due to strong activation, substitution occurs at 2, 4, and 6 positions, forming 2,4,6-tribromoaniline
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Product

- 2,4,6-Tribromoaniline
 - Appears as a white crystalline solid
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Test for Aniline

- Formation of a white precipitate with bromine water is used as a qualitative test for aniline
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Precautions

- Excess bromine water should be avoided
 - Reaction should be carried out under controlled conditions
 - Bromine must be handled carefully due to its toxic nature
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Preparation of Monosubstituted Anilines

Direct electrophilic substitution on aniline leads to polysubstitution.

To obtain monosubstituted anilines, the amino group must be protected.

Method

- Aniline is first acetylated to form acetanilide
 - Electrophilic substitution is carried out on acetanilide
 - The protecting group is later removed by hydrolysis
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Reason for Difficulty in Monosubstitution

- The -NH_2 group strongly activates the benzene ring
 - This results in multiple substitutions instead of a single substitution
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Clinical / Practical Importance

- Demonstrates electrophilic aromatic substitution
- Used for identification of aniline in laboratories