

Research Paper

SYNTHESIS AND ANTIMICROBIAL EVALUATION OF HEXAMINE PREPARED BY FORMALDEHYDE

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Hexamine (hexamethylenetetramine) is an important industrial chemical with applications in pharmaceuticals, explosives, and resin production. This study focuses on the synthesis and evaluation of hexamine using formaldehyde as the primary reactant. The synthesis process involves the reaction of formaldehyde with ammonia under controlled conditions to form hexamine. Various reaction parameters, including temperature, pH, and molar ratios, are optimized to maximize yield and purity. The evaluation includes purity assessment, stability testing, and potential industrial applications. The study provides insights into an efficient and scalable method for hexamine production while considering environmental and economic factors.

Key Words: Hexamine, Formaldehyde, Synthesis, Ammonia, Characterization, FTIR, NMR, Thermal Analysis, Industrial Applications, Yield Optimization, Stability Testing.

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