

- investigations of 1-amino-3-substituted-1,2,3-triazolium salts, and a new route to 1-substituted-1,2,3-triazoles[J]. *J Heterocyclic Chem*, 2005,42(19): 19-27.
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Synthesis and Characterization of 1-Amino-3-methyl-1,2,3-triazolium Nitrate

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Abstract: 1-Amino-3-methyl-1,2,3-triazolium nitrate (1-AMTN) was synthesized using glyoxal and hydrazine hydrate as starting materials in three steps, i. e. addition-elimination, cyclization, methylation and replacement reaction. The overall yield is 71.8% (based on glyoxal). The structure of products was confirmed by IR, MS, NMR and elemental analysis. The properties of 1-AMTN were estimated; density $1.63 \text{ g} \cdot \text{cm}^{-3}$, enthalpy of formation $84 \text{ kJ} \cdot \text{mol}^{-1}$ and detonation velocity $8115 \text{ m} \cdot \text{s}^{-1}$. The key factors of cyclization and methylation were studied and the optimal reaction conditions were confirmed; medium acetonitrile, 20°C , and the ratio of glyoxal bishydrazone and methyl iodide 1 : 5. The overall yield of cyclization and methylation is 86.7%. In addition, activated manganese oxide was recycled and its mechanism was also discussed.

Key words: organic chemistry; 1-amino-3-methyl-1,2,3-triazolium nitrate(1-AMTN); synthesis; characterization

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