Synthesis Improvement and Properties of 1-Amino-3,5-dinitro -1,2,4-triazole

HE Yun[1,2], **FAN Gui-juan**[2], **ZHANG Guang-quan**[2], **HUANG Ming**[2], **LIU Yu-cun**[1]

(1. *College of Chemical Engineering and Environment, North University of China, Taiyuan* 030051, *China*; 2. *Institute of Chemical Materials, CAEP, Mianyang* 621900, *China*)

Abstract: 1-Amino-3,5-dinitro -1,2,4-triazole(ADNT) was synthesized by amination of the sodium salt of 3,5-diamino-1,2,4-triazole (DNT-Na^+) with mesitylene sulfonyl hydroxylamine (MSH) with yield of 66%, in which the DNT-Na^+ was obtained from 3,5-diamino-1,2,4-triazole. The structure of ADNT was characterized by IR, MS, ^{1}H NMR, ^{13}C NMR and elemental analysis, the thermal behavior was studied by differential scanning calorimetry(DSC). The factors effecting amination were investigated as well. Results show that the optimum reaction conditions are the molar ratio DNT-Na^+ to MSH is 1∶1.5, reaction time 12 h at room temperature. The melting and decomposition temperatures are 128.7, 225.8 ℃, respectively, and the impact sensitivity (H_{50}) with 2 kg drop weigh is beyond 112cm, which showing ADNT is an energetic insensitive explosive with good comprehensive performance.

Key words: organic chemistry; synthesis, amination; 1-amino-3,5-dinitro-1,2,4-triazole(ADNT); thermal decoposition

CLC number: TJ55; O62 **Document code**: A **DOI**: 10.3969/j.issn.1006-9941.2014.02.011

读者·作者·编者

更 正

因本人疏忽,发表在《含能材料》2014 年第 1 期《B 炸药在弹丸侵彻作用下的易损性》一文中,数值仿真部分采用“ANSYS/LS-DYNA”软件应为“ANSYS/AUTODYN”软件,特此更正,同时向提出问题的读者表示感谢。

席 鹏