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[首页](#)[稿约信息](#)[编者论坛](#)[编委会](#)[关于本刊](#)[订购本刊](#)[下载中心](#)汪向阳,陈金思,胡献国,徐玉福.钠添加剂对NO_xOUT工艺影响的研究[J].环境科学学报,2014,34(8):2007-2013钠添加剂对NO_xOUT工艺影响的研究Effects of sodium additives on the NO_xOUT process关键词: [NO_xOUT](#) [脱硝](#) [钠添加剂](#) [苯胺废液](#) [焚烧](#)基金项目: [合肥工业大学科研基金 \(No.2011QTXM1423\)](#)

作者 单位

汪向阳 合肥工业大学机械与汽车工程学院, 合肥 230009

陈金思 1. 合肥工业大学机械与汽车工程学院, 合肥 230009; 2. 合肥徽锐工程科技有限公司, 合肥 230009

胡献国 合肥工业大学机械与汽车工程学院, 合肥 230009

徐玉福 合肥工业大学机械与汽车工程学院, 合肥 230009

摘要: 在苯胺废液流化床焚烧实验装置上进行了以尿素做还原剂的选择性非催化还原脱硝 (NO_xOUT) 试验, 研究了不同钠添加剂 (Na₂CO₃、NaOH和NaCl) 对脱硝率以及温度窗口的影响. 结果显示: 微量的钠添加剂即可明显促进脱硝反应, 脱硝率随着钠添加剂用量的增加而升高, 钠添加剂通过产生·OH活性基团从而促进脱硝反应, 3种钠添加剂对脱硝效果促进作用大小依次为NaOH、Na₂CO₃、NaCl, 在温度为900~950 °C, 氨氮比为1.5, 空气过剩系数为1.0~1.2时, NO_xOUT脱硝率达到最大值. 利用热力学原理计算出NO_xOUT脱硝反应的摩尔反应焓、摩尔反应吉布斯函数、化学平衡常数等热力学参数, 结果表明NO_xOUT脱硝是热力学可行的.

Abstract: The selective non-catalytic reduction (SNCR) of NO_x was studied using urea as a reducing agent (NO_xOUT process) in the incineration process of aniline wastewater on a fluid bed experimental system. Several sodium-containing additives such as Na₂CO₃, NaOH and NaCl were added into the NO_xOUT system to improve NO_x reduction efficiency and enlarge temperature window. The results showed that the adding minute amounts of sodium additives significantly improved the NO_xOUT performance. The efficiency of NO_x reduction increased with the addition of either aforementioned sodium additive to the NO_xOUT system. The NO_xOUT percents were affected by the sodium sources in accordance with the order of NaOH > Na₂CO₃ > NaCl. The sodium-containing additives provided ·OH free radicals to improve NO_x reduction at low temperature. The maximum efficiency of NO_x reduction was obtained as the NO_xOUT process was conducted at 900~950 °C, a NH₃/NO_x molar ratio of 1.5 and an excess air coefficient between 1.0 and 1.2. The molar reaction enthalpy, molar formation Gibbs function and constant of reaction rate were calculated using a thermodynamics method, and the results confirmed that the NO_xOUT process in this work was feasible.

Key words: [NO_xOUT](#) [NO_x reduction](#) [sodium additives](#) [aniline wastewater](#) [incineration](#)

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服务热线: 010-62941073 传真: 010-62941073 Email: hjxxb@cees.ac.cn

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