

# Absorption of SO<sub>2</sub> by triethylenetetramine in ether (alcohol)/H<sub>2</sub>O system

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## Abstract

The use of organic solvents to remove SO<sub>2</sub> from flue gas has the advantages of low investment cost, convenient operation, high efficiency, and reusability. We prepared three absorbents in this paper, namely tetraethylenetetramine (TETA), triethylenetetramine /triethylene glycol dimethyl ether (TriEDGME), and triethylenetetramine/triethylene glycol dimethyl ether/H<sub>2</sub>O. The atmospheric bubbling method absorbs SO<sub>2</sub>. The experimental results show that the three kinds of absorbents formed white precipitates after adsorbing SO<sub>2</sub>. The infrared spectra analysis and element analysis of the three types of precipitate showed that their chemical structures were basically the same. The structural formula is NH<sub>2</sub>(CH<sub>2</sub>)<sub>2</sub>NH(CH<sub>2</sub>)<sub>2</sub>NH<sub>3</sub>SO<sub>3</sub>NH<sub>2</sub>·2H<sub>2</sub>O; the product was determined to be a shaped crystal structure by XRD and SEM. In addition, the thermal stability analysis of the product revealed that the product sublimed at 123 °C and decomposed at about 185 °C.

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