

3971659021 : MAJOR CHEMICAL ENGINEERING

KEY WORD : REGENERATION / ACTIVATED CARBON / GLACIAL ACETIC ACID / ORGANIC SOLVENT /
ALKALINE SOLUTION

VARUNEE SUPASAWETHIRUN : REGENERATION OF SPENT ACTIVATED CARBON. THESIS
ADVISOR : ASSIST. PROF. TAWATCHAI CHARINPANICHKUL, Ph.D. THESIS COADVISOR :
MR.SARUNPHONG ARTICHART. 109 pp. ISBN 974-333-687-7.

Glacial Acetic acid is an organic solvent used in rubber manufacturing as a catalyst in the vulcanization process. This solvent is volatile and toxic. The method in taking away its vapor is by using activated carbon absorption process. Generally, the after-use/inactive activated carbon will be discarded and replaced with new activated carbon. The purpose of this research is to regenerate the after-use/inactive activated carbon by studying the factors that have effect in the regeneration process and lead to the most appropriate condition in the regenerating of used activated carbon, in which will help to reduce solid waste.

The methods used for regenerating activated carbon in this research are Neutralization by using alkali solutions and organic solvents. The studied factors are; type and concentration of alkali solutions, type of organic solvent and time used in regenerating. The measurement method of the specific absorption value which have been modified from the Iodine number of standard ASTM 4607-86 is used in analyzing the data.

From the experiment, it is found that the carbon regenerated activated by using both alkali solution and organic solvent has lower specific absorbability than the one determined by using only alkali solution. In studying with the condition of regenerating, it shows that by using 17 cm³ of 10% by weight of Potassium Hydroxide solution with 10 grams of used activated carbon, regenerating times of 30 minutes and 60 minutes provide the best regeneration efficiency. While using 11 cm³ of 10% by weight of Sodium Hydroxide solution with 10 grams of used activated carbon, regenerating time of 15 minutes is the best cost effectiveness condition. This research can confirm there is a considerable cost reduction for the storage of glacial Acetic acid. In addition, it is a potential alternative to reduce hazardous solid waste to the environment.

ภาควิชา วิศวกรรมเคมี

สาขาวิชา วิศวกรรมเคมี

ปีการศึกษา 2542

ลายมือชื่อนิสิต 

ลายมือชื่ออาจารย์ที่ปรึกษา 

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม 