CHARACTERISATION OF BLEACHING EARTH AND ITS PERFORMANCE TO PALM OIL PROCESSING

NOR SYAHIRA ADILA BT ISMAIL

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FACULTY OF CHEMICAL ENGINEERING
UNIVERISITI TEKNOLOGI MARA
SHAH ALAM
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ABSTRACT

This paper study the characterisation of three different type of absorbent which is one of the major tool that will used to predict its performance for palm oil processing. Bleaching earth sample will be collected from Sime Darby research Sdn. Bhd. were characterized by using X-ray Fluorescence (XRF), Inductively Coupled Plasma (ICP-OES) and Fourier Transform Infrared Radiation (FTIR). From XRF result, the composition of each component that exist in the absorbent can be determined such as silica, alumina and magnesium. The composition analysis by using ICP-OES showed the ratio between Na_2O:CaO of each absorbent where it need to be less than one. Other than that, it also can be used to determine the SiO_2:Al_2O_3 ratio which need to be greater than one and it indicate the suitability for bleaching processing. Actual laboratory test also has been conducted to determine the performance evaluation and confirmed with the prediction from the characterisation. Few analysis have been conducted such as free fatty acid (FFA) value, Peroxide value (PV), colour and bleaching efficiency. Absorbent one show the best result out of all adsorbent by comparing the characteristic and performance. Based on the XRF absorbent contain highest amount of silica, SiO and alumina, Al_2O_3 which 43.386 and 14.18 compared to the other adsorbent. It shown lowest amount of metal contain in it such as magnesium, ferum and sodium with value of 17.699, 18.984 and 0.244 respectively. Therefore, absorbent I shown the best result compared to the others.

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CHAPTER 1

INTRODUCTION

1.1 Research background

Bleaching earth is a natural clay that help to enhance the quality of oils and fats where it able to remove the colours, oxidation product, trace metals and gums. There are specific properties that turn it into very valuable clay towards different process industries especially palm oil industries. There are a few mineral contents that help to trap the impurities in the oil such as bentonite. This adsorbent contains mainly silica oxide, aluminium oxide, magnesium oxide and many other elements that can help to enhance the quality of oil. This clay usually come from the volcanic site since it commonly forms from the weathering of volcanic ash. Sodium and calcium bentonite is the main classes of bentonite for the industrial purpose especially for oil and gas drilling and oils and fats processing.