UNIVERSITI TEKNOLOGI MARA

RESIDUAL CRUDE PALM OIL EXTRACTION FROM PALM OIL MILL EFFLUENT USING SIMPLE HEXANE LIQUID-LIQUID EXTRACTION METHOD

MOHAMAD HASSRUL BIN ZAINAL

Final year project report submitted in partial fulfilment of the requirement for the degree of
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APPROVAL SHEET

This Final Year Project Report entitled "**Residual Crude Palm Oil Extraction from Palm Oil Mill Effluent using Simple Hexane Liquid-Liquid Extraction Method**" was submitted by **Mohamad Hassrul Bin Zainal**, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Plantation Technology and Management, in the Faculty of Plantation and Agrotechnology, and was approved by

_____

DR ALAWI SULAIMAN
Supervisor
Faculty of Plantation and Agrotechnology
Universiti Teknologi MARA
Jasin, Melaka

_____

Wan Natasya Wan Ahmed
Project Coordinator
BSc. (Hons.) Plantation Technology and Management
Faculty of Plantation and Agrotechnology
Universiti Teknologi MARA
Jasin, Melaka

_____

Nordiana Binti Ibrahim
Head of Study Center
BSc. (Hons.) Plantation Technology and Management
Faculty of Plantation and Agrotechnology
Universiti Teknologi MARA
Jasin, Melaka

Date:_____

CANDIDATE'S DECLARATION

I declare that the work in this Final Year project was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. The Final Year project report has not been submitted to any other academic institution or non-academic institution for any other degree or qualification

In the event that my Final Year Project is found to violate the conditions mention above, I voluntarily waive the right of conferment of my bachelor degree and agree to be subjected to the disciplinary rules and regulations of Universiti Teknologi MARA.

Name of Candidate	:	**MOHAMAD HASSRUL BIN ZAINAL**
Candidate's ID	:	2012656582
Programme	:	Bachelor of Science (Hons.) Plantation Technology and Management
Faculty	:	Plantation and Agrotechnology
Title	:	Residual Crude Palm Oil Extraction from Palm Oil Mill Effluent using Simple Hexane Liquid-Liquid Extraction Method
Signature of Candidate	:	_____
Date	:	05th March 2015

ABSTRACT

Palm oil mill effluent (POME) is the waste water discharged from the 3 process sterilization process, crude oil clarification process and cracked mixture separation process. POME is basically made of 95-96% water, 0.6-0.7% oil, 4-5% solids 2-4% suspended solid. The standards discharge limit set by Malaysian Department of Environment for oil and grease content in POME was only 50 mg dm-3, but POME at the mill contains up to 4,000 mg dm-3 of oil and grease. This study is focusing on To determine the optimum amount of hexane to extract residual CPO left in POME and the relation between ratio of hexane, time interval and mixing speed for hexane to extract CPO from POME. The method used in this study was liquid-liquid extraction. It is called liquid-liquid extraction because hexane liquid is use to extract oil from POME whereas the POME is also in the form of liquid. Liquid-liquid extraction is mainly affected by exposure time, mixing speed and ratio between hexane and POME. So the optimum time, mixing speed and ratio was 20 minutes, 200 rpm and ratio is 3:5 respectively. By using the optimum ratio, time and speed the amount of residual oil that can be extracted is 17.5% or 0.3gram.Based on the statistical analysis it has been found that ratio of hexane to POME and speed has a significant p-value while effect of time indicates that it was not significant.

TABLE OF CONTENTS