



**STUDY OF STIRRING TIME EFFECT OF LIQUID HAND
SOAP PROCESS MADE OF USED COOKING OIL
(Case Study Used Cooking Oil from Belakang I Street, Simpangan
Village, Bekasi)**

UNDERGRADUATE FINAL PROJECT

**Submitted as one of the requirements to obtain
Sarjana Teknik**

By:


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**FACULTY OF ENGINEERING
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CIKARANG
AUGUST 2023**

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The Panel of examiners declare that the undergraduate thesis entitled “Study of Stirring Time Effect of Liquid Hand Soap Process Made of Used Cooking Oil (Case Study Used Cooking Oil from Belakang I Street, Simpangan Village, Bekasi)” that was submitted by Sarah Nurhanifah Kurniawan majoring in Environmental Engineering from the Faculty of Engineering was assessed and approved to have passed the Oral Examination on June 5th, 2023

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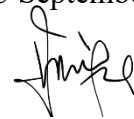
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SOAP PROCESS MADE OF USED COOKING OIL
(Case Study Used Cooking Oil from Belakang I Street, Simpangan
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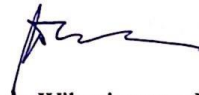
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ABSTRACT

The problem of waste in the environment is becoming a national problem. One of the wastes that pollute the environment is used cooking oil. In 2019, 13 million tons of used cooking oil in Indonesia amounted to 18.5% of the remaining cooking oil consumption. Disposal of used cooking oil waste can cause soil and water pollution. Prevention can be done by utilizing oil in a liquid hand soap. **The study's objective** is to know the effect of stirring time on liquid hand soap manufacturing laboratory scale made of used cooking oil based on analysis of pH, total active materials, insoluble materials in ethanol, and free alkali. The research **method of treatment and experiment was making** liquid hand soap on a laboratory scale. The sample in this study was used cooking oil taken from Belakang I Street, Simpangan Village. **The result and discussion showed that the hand soap product with a stirring time of 45 and 60 minutes had a** showed that pH, free alkaline, and insoluble material in ethanol are significant difference and total active materials is insignificant difference using ANOVA: single factors in comparison stirring time 45 minutes and 60 minutes. The parameter is meet the quality standard but not comply using T-test of equals variance.

Keywords: used cooking oil, liquid hand soap, stirring time, analysis, laboratory scale

ACKNOWLEDGMENTS

In the name of Allah, the Most Gracious and the Most Merciful. All praises are due to Allah SWT, who has granted His mercy and guidance, enabling the author to complete this thesis entitled "Study of Stirring Time Effect of Liquid Hand Soap Process Made of Used Cooking Oil (Laboratory Scale Study Case)". This thesis is written as one of the requirements to obtain a Bachelor of Engineering degree in the Faculty of Engineering, President University.

In writing this thesis, the author would like to express the utmost gratitude to Mrs. Ir. Temmy Wikaningrum, M.Si., MBA, as the academic supervisor, who has provided guidance, direction, and support throughout the writing process. Without her assistance and encouragement, it would not have been possible for the author to complete this thesis successfully.

The author would also like to extend heartfelt appreciation to the beloved family, who has given unwavering support, motivation, prayers, and love throughout the author's academic journey until the completion of this final assignment. Without their prayers and support, it would not have been possible for the author to accomplish this task successfully.

To the friends who have always been there for the author throughout the academic journey, the author would like to express the deepest appreciation. Specifically, to Putri Maharisa, who has given motivation and encouragement, to Nabila and Vennalia, who have provided

temporary accommodation during the author's analysis in Cikarang, and to Ine, who has assisted and accompanied the author in the laboratory.

Also, thank you to the Environmental Engineering batch of 2019 for all the experiences, knowledge, and memories shared together throughout the four years. May our friendship continue to thrive, and may success always be with us. The author realizes that there are still many shortcomings in this thesis. Therefore, the author is open to constructive criticism and suggestions to improve the writing. In conclusion, the author hopes that this thesis can contribute positively to the development of science and technology. May this thesis provide benefits and inspirations for the readers.

Wassalamu'alaikum Warahmatullahi Wabarakatuh.

Cikarang, 25 September 2023



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NOMENCLATURE

Symbol	Description	Unit
A	Remaining sample after drying	g
S	Sample Weight	g
v	Volume of Titration	mL
N	Normality	N

APPENDICIES

Appendix A

Research data results:

pH Test

Stirring Time	Sample	Weight	pH
45 Minutes	1A	0.1000	8.32
	1B	0.1015	8.54
	2A	0.1070	8.63
	2B	0.0964	8.49
Average			8.50

Stirring Time	Sample	Weight	pH
60 Minutes	1A	0.0996	8.77
	1B	0.0984	8.82
	2A	0.1072	8.93
	2B	0.1041	8.86
Average			8.85

Total Active Material

Soluble Material in Ethanol

Stirring Time	Sample	Weight	Erlenmeyer Weight	Erlenmeyer and Sample Weight	%
45 Minutes	1A	5.0047	119.6993	120.5460	42.30
	1B	5.0059	120.9649	121.8104	42.23
	2A	5.0013	125.2828	126.143	43.00
	2B	5.0070	107.3926	108.3024	45.43

Stirring Time	Sample	Weight	Erlenmeyer Weight	Erlenmeyer and Sample Weight	%
60 Minutes	1A	5.0040	62.4685	63.354	44.24
	1B	5.0023	61.1965	62.0788	44.09
	2A	5.0079	62.8732	63.7782	45.18
	2B	5.0095	121.9118	122.8054	44.60

Soluble Materials in Petroleum Ether

Stirring Time	Sample	Weight	Erlenmeyer Weight	Erlenmeyer and Sample Weight	%
45 Minutes	1A	1.2521	110.9547	111.1973	19.38
	1B	1.2530	112.5113	112.7117	15.99
	2A	1.2561	117.4695	117.6558	14.83
	2B	1.2566	115.4101	115.6092	15.84

Stirring Time	Sample	Weight	Erlenmeyer Weight	Erlenmeyer and Sample Weight	%
60 Minutes	1A	1.2521	110.9547	111.1973	19.38
	1B	1.2530	112.5113	112.7117	15.99
	2A	1.2561	117.4695	117.6558	14.83
	2B	1.2566	115.4101	115.6092	15.84

Insoluble Materials in Ethanol

Stirring Time	Sample	Weight	Plate Glass and Filter Weight	Plate Glass, Filter and Sample Weight	%
45 Minutes	1A	2.4996	80.2569	80.2711	0.56
	1B	2.5060	69.2768	69.2927	0.57
	2A	2.5016	49.3264	49.3388	0.47
	2B	2.5056	84.1812	84.1936	0.55

Stirring Time	Sample	Weight	Plate Glass and Filter Weight	Plate Glass, Filter and Sample Weight	%
60 Minutes	1A	2.5011	89.3878	89.3988	0.37
	1B	2.5088	89.3690	89.3793	0.34
	2A	2.5059	89.2834	89.2929	0.43
	2B	2.5053	80.1785	80.1905	0.42

Free Alkali

Stirring Time	Sample	Titration	%Free Alkali
45 Minutes	1A	0.40	0.064
	1B	0.40	0.064
	2A	0.30	0.048

	2B	0.35	0.056
Average			0.058

Stirring Time	Sample	Titration	%Free Alkali
60 Minutes	1A	0.15	0.024
	1B	0.12	0.019
	2A	0.20	0.032
	2B	0.20	0.032
Average			0.058

Appendix B

Analysis in Laboratorium

