

## KARAKTERISTIK BIO-OIL HASIL DARI DESTILASI SEDERHANA ASAP CAIR LIMBAH INDUSTRI KELAPA

### ABSTRAK

Asap cair dari PT. Eramas hasil dari pirolisis dilakukan destilasi atau pemurnian. Asap cair merupakan asam cuka (vinegar) yang diperoleh dengan cara pirolisis. Destilasi asap cair limbah industri kelapa merupakan suatu pemanasan pada asap cair berdasarkan perbedaan titik didih kemudian didinginkan untuk mendapatkan Bio-oil yang lebih baik. Destilasi asap cair dilakukan selama 2 jam dengan suhu 50°C-101°C, suhu 101°C-151°C, dan suhu 151°C-201°C. Bio-oil merupakan cairan hasil kondensasi dari limbah biomassa pada proses pirolisis yang melalui penyaringan dan pemurnian untuk memisahkan Bio-oil dari tar dan bahan-bahan pengotor lainnya. Pemanasan ini bertujuan untuk memisahkan komponen yang tidak diharapkan pada asap cair seperti tar dan benzopiren. Proses tersebut sangat dipengaruhi oleh suhu, serta karakteristik yang dihasilkan seperti rendaman, pH, densitas, kadar fenolik dan antibakteri dengan menggunakan bakteri *Escherichi coli* dan *Stpahylococcus epidermis*. Hasil penelitian yang didapatkan dari destilasi dari suhu 50°C-101°C, dengan hasil rendemen 75%, hasil nilai pH 3, densitas 0,9842g/ml, kadar fenolik 20,7456mg GAE/g, dan antibakteri 10,0, 9,7mm. pada suhu 101°C-151°C hasil rendemen 66%, nilai pH 2, densitas 0,9660g/ml, kadar fenolik 36,2649mg GAE/g dan antibakteri 10.9, 10.0 dan suhu 151°C-201°C hasil rendemen 60% nilai pH 2, densitas 0,9681g/ml, kadar fenolik 33,0439mg GAE/g dan antibakteri 9,3, 9,0.

**Kata kunci:** Asap Cair, Bio-oil, Destilasi

**CHARACTERISTICS OF BIO-OIL RESULTING FROM SIMPLE  
DISTILLATION OF LIQUID SMOKE FROM COCONUT  
INDUSTRIAL WASTE**

**ABSTRACT**

*Liquid smoke from PT. Eramas results from pyrolysis are distilled or purified. Liquid smoke is vinegar acid obtained by pyrolysis. Distillation of liquid smoke from coconut industry waste is a heating of liquid smoke based on differences in boiling point and then cooled to get better Bio-oil. Distillation of liquid smoke is carried out for 2 hours with a temperature of 50°C-101°C, a temperature of 101°C-151°C, and a temperature of 151°C-201°C. Bio-oil is a liquid condensed from biomass waste in the pyrolysis process which goes through screening and purification to separate Bio-oil from tar and other impurities. This heating aims to separate components that are not expected in liquid smoke such as tar and benzopyrene. The process is greatly influenced by temperature, as well as the resulting characteristics such as bath, pH, density, phenolic and antibacterial levels using *Escherichia coli* and *Staphylococcus epidermis* bacteria. The results of the study were obtained from distillation from a temperature of 50°C-101°C, with a yield of 75%, the result of a pH value of 3, a density of 0.9842g / ml, phenolic levels of 20.7456mg GAE / g, and antibacterial 10.0, 9.7mm. at a temperature of 101°C-151°C yield of 66%, pH value 2, density 0.9660g/ml, phenolic content 36.2649mg GAE/g and antibacterial 10.9, 10.0 and temperature 151°C-201°C yield 60%, pH value 2, density 0.9681g/ml, phenolic content 33.0439mg GAE/g and antibacterial 9.3, 9.0.*

**Keywords:** Bio-oil, distillation, liquid smoke