

## **Pengaruh Komposisi Minyak Terhadap Sifat Fisik Campuran Minyak Jarak dan Minyak Nyamplung Pada Suhu 120°C**

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### **INTISARI**

Di masa sekarang energi menjadi hal yang sangat penting dalam mendukung aktivitas manusia. Salah satu sumber energi yang dibutuhkan adalah energi dari bahan bakar. Sementara ini bahan bakar yang dipakai masih bersumber dari bahan bakar fosil. Banyaknya kebutuhan energi saat ini otomatis produksi bahan bakar dari fosil terus meningkat, sementara bahan bakar fosil sangat terbatas. Ada beberapa tujuan dalam penelitian ini, yaitu mengetahui kandungan asam lemak yang terdapat pada minyak Jarak dan minyak Nyamplung, mengetahui sifat dan karakteristik campuran minyak Jarak dan minyak Nyamplung, serta mengetahui pengaruh variasi waktu pemanasan terhadap sifat campuran minyak.

Dalam penelitian ini dilakukan pencampuran antara minyak Jarak dan minyak Nyamplung. Pencampuran kedua bahan dilakukan pada temperatur 120°C selama 30 menit dengan variasi campuran minyak, yaitu 100%-0%, 90%-10%, 80%-20%, 70%-30%, 60%-40%, 50%-50%, 40%-60%, 30%-70%, 20%-80%, 10%-90% dan 0%-100%. Pada penelitian variasi waktu pemanasan terdapat 3 variasi waktu pemanasan yaitu 30 menit, 60 menit, dan 90 menit.

Dari pengujian terhadap sifat fisik dan kimia diperoleh hasil : Nilai densitas minyak Jarak 100% lebih tinggi daripada minyak Nyamplung 100%, serta nilai densitas yang tinggi pada campuran minyak Jarak dan minyak Nyamplung terdapat pada campuran minyak yang komposisinya didominasi oleh minyak Jarak. Nilai viskositas minyak Jarak lebih tinggi daripada nilai viskositas minyak Nyamplung, serta nilai viskositas pada campuran minyak Jarak dan minyak Nyamplung dengan angka yang tinggi terdapat pada campuran minyak yang kuantitasnya didominasi minyak Jarak. Nilai kalor minyak Jarak lebih rendah daripada minyak Nyamplung, serta nilai kalor yang tinggi pada campuran minyak Jarak dan minyak Nyamplung terdapat pada minyak campuran yang didominasi oleh minyak Nyamplung. Nilai *flash point* minyak Jarak lebih tinggi daripada minyak Nyamplung, serta nilai *flash point* yang tinggi terdapat pada campuran minyak yang didominasi minyak Jarak daripada yang didominasi minyak nyamplung. Asam lemak yang mendominasi minyak Jarak yaitu asam linoleat dengan angka 41,59% dan minyak Nyamplung didominasi oleh asam oleat dengan angka 36,59%.

Kata Kunci : Minyak Jarak, minyak Nyamplung, viskositas, densitas, *flash point*, kalor

## ***The Effect of Oil Composition on the Physical Properties of the Mixture between Castor Oil and Calophyllum Oil at the Temperature of 120°C***

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### **ABSTRACT**

*In the present time, energy has become very important in supporting human activities. One of the energy sources needed is energy from the fuel. So far the types of fuel used is taken from fossil fuels. The current high demand for energy from fossil fuel production continues to increase, while fossil fuels are very limited. There are several objectives in this research, which are to know the fatty acid content found in the castor oil (minyak jarak) and calophyllum oil (minyak nyamplung), to know the nature and characteristics of mixture between castor oil and calophyllum oil, and to know the influence of the variation of heating time to the nature of oil mixture.*

*In this research, there is a mixture between castor oil and calophyllum oil. The mixing of both materials was carried out at 120°C for 30 minutes with a mixture of 100%-0%, 90%-10%, 80%-20%, 70%-30%, 60%-40%, 50%-50%, 40%-60%, 30%-70%, 20%-80%, 10%-90% and 0%-100%. In the variation of heating time, there are 3 variations of heating time which are 30 minutes, 60 minutes, and 90 minutes.*

*The test on the physical and chemical properties obtained results: The density value of 100% castor oil is higher than in 100% Calophyllum oil. In addition, high density value in the mixture of castor oil and calophyllum oil is found in oil mixture whose composition is dominated by castor oil. The viscosity value of the castor oil is higher than the viscosity value of calophyllum oil. In addition, the viscosity fluid in the mixture of castor oil and calophyllum oil is found in the oil mixture which is dominated by castor oil. The calorific value of the castor oil is lower than that of calophyllum oil. In addition, the high calorific value of the oil mixture of castor oil and calophyllum oil is found in oil mixture whose composition is dominated by calophyllum oil. Flash point oil value of castor oil is higher than calophyllum oil. In addition, high flash point value is found in oil mixture whose composition is dominated by castor oil rather than the one which is dominated by calophyllum oil. Fatty acids that dominate the castor oil is linoleic acid with 41.59% and calophyllum oil is dominated by oleic acid with 36.59%.*

**Keywords:** *Castor oil, Calophyllum oil, viscosity, density, flash point, heat*