

INTISARI

Proses produksi kelapa sawit menghasilkan limbah berupa cangkang, serat dan tandan kosong yang berlimpah. Sebagian besar limbah industri kelapa sawit menumpuk dan biasanya hanya digunakan sebagai urug jalan atau dibakar begitu saja. Dengan begitu untuk mengurangi limbah kelapa sawit dilakukan proses pengeringan biomassa ini, dimana proses pengeringan biomassa bertujuan untuk menjadikan limbah kelapa sawit sebagai sumber energi terbarukan.

Proses pengeringan biomassa limbah kelapa sawit berupa cangkang, serat, dan tandan kosong menggunakan alat oven *microwave* dan oven konvensional. Proses pengeringan biomassa dilakukan untuk mengetahui pengurangan kadar air, laju aliran massa, konstanta laju pengurangan konstan dan konstanta laju pengurangan menurun pada cangkang, tandan kosong, dan serat kelapa sawit.

Berdasarkan hasil penelitian pengeringan limbah kelapa sawit pada cangkang, serat, dan tandan kosong. Hasil didapatkan bahwa cangkang memiliki massa jenis paling tinggi dibanding serat dan tandan kosong, sehingga cangkang memiliki laju aliran masa paling rendah dibandingkan dengan serat dan tandan kosong. Hal ini disebabkan oleh ketebalan, sifat bahan, bentuk dan suhu yang digunakan. Proses pengeringan biomassa menggunakan oven *microwave* lebih cepat kering dibandingkan dengan oven konvensional. Hasil penelitian tersebut menghasilkan konstanta laju pengeringan konstan dan konstanta laju pengeringan menurun. Konstanta laju pengeringan konstan dan menurun akan semakin besar, jika suhu pengeringan semakin besar.

Kata kunci : Pengeringan biomassa, oven *microwave*, oven konvensional, Cangkang, Serat dan Tandan Kosong.

ABSTRACT

The oil palm production process produces abundant waste in the form of shells, fibers and empty bunches. Most of the palm oil industry waste is piled up and is usually only used as a road drain or simply burned. Therefore to reduce palm oil waste, this biomass drying process is carried out, where the biomass drying process aims to make palm oil waste as a renewable energy source.

The drying process of oil palm waste biomass in the form of shells, fibers, and empty bunches using conventional and microwave ovens. The biomass drying process is carried out to determine the reduction of water content, mass flow rate, constant reduction rate constant and reduction rate decreases on shells, empty bunches, and palm fiber.

Based on the results of research on drying oil palm waste in shells, fibers, and empty bunches. The results showed that the shells had the highest density compared to the fibers and empty bunches, so the shells had the lowest mass flow rate compared to fiber and empty bunches. The results showed that the shells had the highest density compared to the fibers and empty bunches, so the shells had the lowest mass flow rate compared to fiber and empty bunches. This is caused by the thickness, the nature of the material, the shape and temperature used. Biomass drying using a microwave oven dries faster than conventional oven. The results of this study produce constant drying rate constants and decreasing drying rate constants. So the constant drying rate and the decreasing rate will be even greater, if the drying temperature is getting bigger.

Keywords: Biomass drying, microwave oven, conventional oven, shell, fiber and empty bunches.