

ABSTRAK

**KONVERSI LIMBAH TONGKOL JAGUNG (*CORN COB*) DAN PLASTIK
POPLYPROPYLENE MENJADI *CRUDE BIO OIL* SEBAGAI BAHAN
BAKAR ALTERNATIF MELALUI METODE *CO-PYROLYSIS* DENGAN
KATALIS BENTONIT**

(Adelia Chairunnisa, 2026, 63 halaman, 15 Tabel, 9 Gambar, 3 Lampiran)

Penelitian ini bertujuan untuk mengetahui pengaruh konsentrasi katalis bentonit terhadap yield, karakteristik, dan komposisi senyawa *crude bio-oil* hasil co-pyrolysis tongkol jagung dan plastik polypropylene (PP). Proses co-pyrolysis dilakukan pada suhu 350°C selama 60 menit dengan variasi konsentrasi katalis bentonit 0%, 3%, 6%, 9%, dan 12%. Hasil penelitian menunjukkan bahwa peningkatan konsentrasi katalis bentonit cenderung meningkatkan yield *crude bio-oil* dari 21,8% menjadi 28% serta meningkatkan nilai kalor dari 7707,74 cal/g menjadi 8581,53 cal/g. Densitas *crude bio-oil* menurun dari 0,7588 g/mL menjadi 0,7413 g/mL, sedangkan viskositas meningkat dari 4,29 cSt menjadi 5,10 cSt. Titik nyala mengalami penurunan dari 31,5°C menjadi 29,8°C. Hasil analisis GC-MS menunjukkan bahwa *crude bio-oil* didominasi oleh senyawa hidrokarbon. Konsentrasi katalis bentonit 12% menghasilkan karakteristik *crude bio-oil* terbaik berdasarkan yield dan nilai kalor yang diperoleh.

Kata Kunci: *Co-Pyrolysis*, Tongkol Jagung, Bentonit, *Polypropylene*

ABSTRACT

CONVERSION OF CORN COB WASTE AND POLYPROPYLENE PLASTIC INTO CRUDE BIO-OIL AS AN ALTERNATIVE FUEL VIA CO-PYROLYSIS USING A BENTONITE CATALYST

(Adelia Chairunnisa, 2026, 63 pages, 15 tables, 9 figures, 3 appendices)

This study aims to determine the effect of bentonite catalyst concentration on the yield, characteristics, and compound composition of crude bio-oil produced from the co-pyrolysis of corn cobs and polypropylene (PP) plastic. The co-pyrolysis process was conducted at 350°C for 60 minutes, using bentonite catalyst concentrations of 0%, 3%, 6%, 9%, and 12%. The results indicate that increasing the bentonite catalyst concentration tended to increase the crude bio-oil yield from 21.8% to 28% and raise the calorific value from 7,707.74 cal/g to 8,581.53 cal/g. The crude bio-oil density decreased from 0.7588 g/mL to 0.7413 g/mL, while viscosity increased from 4.29 cSt to 5.10 cSt. The flash point decreased from 31.5°C to 29.8°C. GC-MS analysis revealed that the crude bio-oil was dominated by hydrocarbon compounds. A bentonite catalyst concentration of 12% yielded the best crude bio-oil characteristics based on the obtained yield and calorific value.

Kata Kunci: Co-Pyrolysis, Corn Cobs, Bentonite, Polypropylene