Research Article:

THERMAL BEHAVIOUR OF FIVE DIFFERENT DATE PALM RESIDUES OF ALGERIA
BY THERMOGRAVIMETRIC ANALYSIS

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Abstract:
Renewable energy has become more important globally especially with the current fuel and economic crisis. Date palm biomasses are highly potential materials for energy resources. The fact that they are renewable and abundantly available are amongst the attractive reasons of employing them as the major source for renewable energy. The purpose of this research was to investigate the thermal behavior of date palm biomass in order to evaluate their usefulness for energy production. In microparticular scale, the thermogravimetric analysis (TGA) is one of the techniques used to determine the thermal properties of five different date palm residues that were studied: (date palm rachis (DPR), date palm trunk (DPT), leaf base (Petiole) (LB), fruitstalk prunings (FP) and liff (LP)). The TGA technique consists to record the lost weight during the increase in temperature from 20°C until 600°C with a 10°C/min heating rate. The thermograms presented a departure phase of free water (from room temperature to 110°C) before the degradation process of the lignocellulosic constituents. The lignin and hemicellulose play an important role on the degradation of lignocellulosic materials at the temperature under 250°C. The degradation of cellulose begins at 250°C and overlaps to that of lignin until 450°C.

Key words: TGA; DSC; lignocellulosic material; biomass; Algerian date palm.

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