



TREATMENT AND MANAGEMENT OF DISTILLERY FERMENTED FRUIT SPENT MARC. I. PROCESSING INTO COMPACTED SOLID FUEL

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Abstract

The study presents the processing possibilities for marc resulted as still residue from the distillation of fermented fruits in view to obtain a compacted solid fuel. Initial marc composition (carbon, hydrogen, nitrogen, sulphur and oxygen contents) determined by elemental analysis is evidenced, as well as technical characterisation (ash and moisture contents) and ash's qualitative composition, chemical characterisation of the liquid phase (pH, total phosphorus, acidity and conductivity). The biomass was initially dried in natural conditions (at 20°C and 50% humidity) and then at 105°C in a drying stove, until constant mass was reached. Dried biomass was chopped into small pieces of different sizes in the range 0÷5 mm and moistened at different moisture degrees: 15%, 20% and 25%. Cylindrical briquettes were prepared, from three types of material, using a piston press with hydraulic action at pressures of either 600 kgf·cm⁻² or 900 kgf·cm⁻². The obtained briquettes were characterized in order to determine the heating power, their behaviour in the presence of water and also the mechanical properties (falling and bending strengths). The good values of heating power (12.72 MJ·kg⁻¹ at 15 % moisture) and bending strength (up to 150 kgf·cm⁻²) of the briquettes obtained at 900 kgf·cm⁻² pressure recommend their use as domestic fuel.

Key words: biomass processing, briquetting, marc, solid fuel

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