

# **Effective Conversion of Waste Cotton Textile by Acid Hydrolysis to Produce Ethanol Using *Saccharomyces Cerevisiae*.**

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## **Abstract**

There is inadequate and fluctuating supply of ethanol in Zimbabwe, leading to the failure in meeting a constant 20% blending ratio of ethanol to unleaded gasoline. Blending the gasoline with ethanol increases the fuel octane rating by blending up to 20%. Ethanol production for fuel blending is an economic technique by taking advantage of the starchy organic biomass for fermentation and producing ethanol. This work focuses on the production of ethanol from waste cotton textile. Waste cotton textile contains 99% cellulose which can be utilised for ethanol production. Experiments were carried out in the laboratory to assess (a) the acid and alkaline hydrolysis of the waste cotton textile for cellulose conversion to glucose using different concentrations of 2,4,6 and 8M, temperatures of 90,100 and 121<sup>o</sup>C and 1.5atm for 1h (b) propagation capability of the yeast pre-fermentation at 28,30 and 32<sup>o</sup>C . The different propagated yeast samples were also taken for fermentation at 32<sup>o</sup>C and produced an average of 10% alcohol content which was then distilled to produce 85% hydrous ethanol.

## **Key words**

Waste cotton textile, Hydrolysis, Yeast, Fermentation, Ethanol