

## Thermophysical bases of catalytic and non-catalytic transesterification of rapeseed oil in ethanol under supercritical fluid conditions

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### Abstract

Catalytic and non-catalytic transesterification reactions of rapeseed oil in ethanol medium have been experimentally investigated under SCF condition with ultrasonic exposure on the reactive environment. The temperature range from 623 K to 653 K, pressures up to 30 MPa and molar ratio of “ethyl alcohol - rapeseed oil” from 6: 1 to 20:1. Heterogeneous catalysts have been used ( $\text{Al}_2\text{O}_3$ ,  $\text{ZnO}/\text{Al}_2\text{O}_3$ ,  $\text{MgO}/\text{Al}_2\text{O}_3$ ,  $\text{SrO}/\text{Al}_2\text{O}_3$ ). New data have been obtained on the isobaric heat capacity of the ternary system “ethanol - rapeseed oil - catalyst” with a molar ratio from 6:1 to 30:1 in the temperature range of 303-563 K and pressures of 9.8 - 29.4 MPa.