

## A CONCENTRATION OF ORGANIC COMPOUNDS OF ALCOHOLIC DISTILLATE UNDER BIOETHANOL PRODUCTION

Sergiy Ivanov<sup>1</sup>, Petro Shiyan<sup>1</sup>, Yuri Buliy<sup>1</sup>, Anatoly Kuts<sup>1</sup>

<sup>1</sup>*National University of Food Technology, Ukraine, Kiev, Volodymirska st., ybuliy@yandex.ru*

For providing of competition possibility of bioethanol, as an alternative energy source there is, a necessity in development and introduction of innovative technology of rectification. This paper is devoted to solving of this problem. The technology of the guided rectification has been offered, which foresees realization of defined in time delay of liquid loops on the plate of column and its synchronous flowing on plates in two successive stages: at the first stage liquid is over flown from each odd onto each successive pair plate, at the second - from each pair onto each successive odd in order of location plate [1].

The objective of paper was research of efficiency of the offered technology in production terms. For this purpose starting column with 30 sieve by plates it was equipped with mobile valves, which in turn closed and opened the flowings openings of plates depending on the set algorithm. On a plate of feed 135 litres/h of absolute alcohol (a.a.) acted: main faction of ethyl spirit - 8,5 %, shoulder-straps from the condenser of distillation column – 9,4 %, condenser of separator of carbon dioxide - 3,0 %, fusel alcohol - 1,5 %, unpasteurized alcohol – 1,5 % from a.a. of alcoholic distillate. Time of delay of liquid on plates was 15 seconds., flowing time – 4 seconds. Pressure in the cube of column was 17,5 kPa, in its top part - 2.5 kPa; temperature in the cube of column fluctuated within the limits of 102-103° Centigrade, in its top part of 90-91° Centigrade, temperature of cold water at the condenser inlet of 15° Centigrade, on the outlet after dephlegmator – 65° Centigrade. The softened water for hidroselection acted on the top plate. Its charges provided the change of concentration of ethyl spirit in the cube of column from 15 to 4 %. Estero-fusel concentrate formed in the process of acceleration was selected from a columns condenser in an amount of 0,23 - 0,27% from a.a. of alcoholic distillate.

The analysis of results has shown that in the process of the guided rectification intermediate and final admixtures possessed the properties of main. Regardless the degree of gidroselection aldehydes, esteras, akrolein, crotonic aldehyde, acetone, iisopropyl alcohol and n-pentanol were withdrawn completely. Methyl alcohol for greater extent was withdrawn under moderate of hidroselection.

It is experimentally well-proved that software of cycles of rectification under conditions of deep hidroselection allows effectively to withdraw main the intermediate and final organic admixtures of alcohol, to increase multipleness of aldehydes concentration by 43,0 %, esters by 46,7 %, fusel oil by 54,0 %, to reduce the charges of warming steam for the process of acceleration of spirit-containing factions by 40 % at stably high quality of commodity products. Cube liquid, released from the different groups of organic admixtures, should be used for gidroselection in a column for the epuration of alcoholic distillate.

**KEY WORDS:** bioethanol, a column, rectification, guided cycles, hidroselection.