

## **THE ROLE OF PURIFICATION METHODS IN BEER MANUFACTURING TECHNOLOGY**

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Brewing is one of the dynamically developing branches of biotechnology in the world. Beer is a low-alcohol beverage obtained by alcoholic fermentation of malt mash with the addition of hops. To date, beer is the third most popular drink after water and tea, but in the last decade the volume of beer production in Ukraine has decreased, which is associated with a drop in material provision of the population and a reorientation of the consumer to cheaper brands. The technology of beer includes the following stages: preparation of production, raw materials, obtaining malt, its crushing, mashing, filtering of mash, hopping, fermentation, beer ripening and filtration, carbonization, bottling and packaging. It should be noted that the quality of the ready product depends on the raw materials used, the recipe and, the modes of conducting the technological process. The critical stage in the production of beer is the clarification, during which suspended colloid particles, mechanical inclusions, yeast cells are extracted, which increases the stability of the ready product during storage and prolongs its expiration date. Clarification can be carried out by centrifugation and filtration. Centrifugation can extract only large particles and yeast cells, so it is ineffective, while properly selected filtration conditions allow to achieve high biological and protein-colloidal stability of beer without impairing its organoleptic properties. For filtering various filters are used: precoat filter, filter presses and membrane filters. The latter is used only for beer that has undergone complete preliminary and basic clarification by other methods, since the pore sizes of the membranes are rapidly clogged, which makes their use not rational. Plate-type filter presses based on cardboard are cumbersome, non-automated and labor-intensive in maintenance. The most widely used for clarification of beer are precoat filters (candle, disk, sheet and frame). Structurally, such filters involve the deposition of various particle sizes of auxiliary material (kieselguhr or perlite) into special partitions. Despite the high quality indicators of beer obtained by filtration through precoat filters, their high productivity, ease of sterilization, it is necessary to point out the inefficiency of natural materials and the additional expenses associated with the irrecoverability of use and their subsequent utilization. Thus, the development of new ways of clarifying beer and beer mash is quite actual for biotechnology. At the department of biotechnology NUPh, a feasibility study is being conducted of using ftroplastic filters to purify beer from yeast and suspended colloidal particles.