

Polymers (PolyBIND®) – New ways in microbiology

Applications:

- for analysis of large sample quantities
- for continuous sampling
- in measured products of all types of barrels
- in difficult or impossible to filtrate liquids such as milk, red wine or juices
- for disinfection of liquids

Advantages:

- detection of trace contaminations due to large sample volumes
- closed anaerobic system
- detection in difficult or impossible to filtrate liquids
- no membrane filtration necessary
- easy handling
- process online applicable

This new developed process enables for the very first time the quick and easy isolation of microorganisms and viruses from large sample volumes and highly viscous or solid-loaded liquids without blocking.

The separation and enrichment of microorganisms from large sample volumes or viscous liquids always posed a problem for microbiological diagnostics in beverage industry. Due to blocking phenomena filtration- or centrifugation methods are time-consuming or fail completely.

Numerous cells and microorganisms exhibit a firm or reversible connection to ionic surfaces. Special polymer particles have been developed in cooperation with the Fraunhofer Institute for Applied Polymer research. These are suitable for binding bacteria, yeast, fungi and viruses efficiently due to functionalized surfaces, regardless of the sample type and quantity.

Subsequently microorganisms from large sample volumes are to be adsorbed and can be analyzed immediately or cultivated. The statistical probability of detecting trace contaminations is thus greatly increased.

This procedure was developed, validated and patented (2014) in cooperation with Bitburger Braugruppe GmbH. The system was tested with *Lactobacilli*, *Pediococci*, *Pectinatus*, *Megasphaera* and yeast. The detection limit is 10 – 100 cells / analysed volume.

Procedure

- 1 Bonding of the microorganisms existing in a liquid to the polymer
- 2 Detaching of the microorganism-loaded polymer particles with a special hardware (Granusim, www.schuett.de), cultivation or direct analysis of the polymer
- 3 Microbial diagnostics (e.g. microscoping, PCR etc.)

