

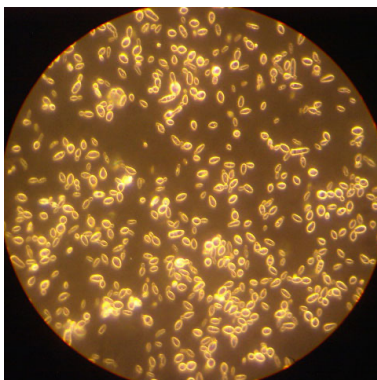
# APPLICATION NOTE

## Turbid Beer



### Avoid such risk by continuous and targeted routine control

(Naturally) Turbid beer is produced by many breweries in different types as a speciality product. But turbid beer may also be a source of complaint – in the case when beer spoiling bacteria or yeasts proliferate in the finished container. The good news: with regular and targeted process control, turbid beer can be avoided. If a contamination with a beer spoiler is known, it is essential to localize the source of contamination instantly to prevent spoilage of the following batches.



### The Problem

Naturally beer is regarded as a microbiological stable product so the group of real beer spoilers is quite limited. Only such microorganisms which are satisfied with the poor offer of nutrients, which have adapted to the low pH and besides are able to live without oxygen may proliferate and lead to turbidity in the finished beer. Most problematic is a contamination with slow growing bacteria or yeasts. Those often may stay hidden some weeks in a latency period without proliferation before they suddenly cause area wide turbidity within a few days, mostly in all containers of a lot.

### The Solution

Out of the bacteria group, there are mostly the lactic acid bacteria *Lactobacillus backii*, *L. lindneri* or *Pediococcus*, rarely also appearing *Pectinatus* or *Megasphaera*, which cause time-delayed beer spoilage. Those lactic acid bacteria often are noticed only by producing visible turbidity, while they stay neutral in odor and taste. The two latter genera are easily detectable by their penetrating odor resembling decay, sewage, or vomit.

From the group of spoilage yeasts there are mainly occurring *Saccharomyces cerevisiae* var. *diastaticus* or *Dekkera* (*Brettanomyces*). It may take even months until a contamination with *Dekkera* breaks out. In case of yeast contamination there is always a high risk of burst. The reason: Yeasts – as the brewer's yeast does – are often producing high levels of carbon dioxide during fermentation.

When tracing a contamination through the process line, PCR analysis is by far the most helpful method. Only with its comparable results – species of spoilers and their concentration ratio – a reliable localization of potential contamination sources is possible.

