



***Saccharomyces cerevisiae* var. *diastaticus* Information Sheet:**

Saccharomyces cerevisiae var. *diastaticus* is a natural variant of *Saccharomyces cerevisiae* that can hydrolyze wort dextrins into fermentable sugars (Andrews and Gilliland, 1952). This ability has been linked to the presence of *STA* genes, which encode for the exoenzyme glucoamylase, also referred to as amyloglucosidase (Tamaki, 1978). This amylolytic activity can lead to hyperattenuation, and/or secondary fermentation which can cause excess carbon dioxide formation in bottles, cans or kegs. It is for this reason that contamination with *Saccharomyces cerevisiae* var. *diastaticus* is generally unwanted.

Saccharomyces cerevisiae var. *diastaticus* can be found in a variety of places in the brewery including, but not limited to: bottling lines, pipework, pitching yeast, the brewhouse, and fermentation cellar (Meier-Dornberg et al., 2017). Several microbiological techniques can be used for detection, such as growth on Lin's Cupric Sulfate Media (LCSM), starch agar plates, as well as growth in certain enrichment broths. Additionally, since the dextrinase activity has been linked to *STA* genes, polymerase chain reaction (PCR) can be used to detect *Saccharomyces cerevisiae* var. *diastaticus* (Yamauchi et al., 1998) however, molecular techniques require specialized equipment and are more expensive than conventional plating techniques. These restrictive conditions mean these techniques are not feasible at every brewery but certain independent laboratories offer these services.

It is worth noting that not all *STA1* positive yeast are considered contaminants. In fact, there are several "classic" brewing strains that have been used and cultivated for more than 30 years and are generally classified as "high-attenuators."

1. Andrews J, Gilliland RB. 1952. Super-attenuation of beer: a study of three organisms capable of causing abnormal attenuations. *J. Institute of Brewing* 58(3):189-196
2. Tamaki H. 1978. Genetic studies of ability to ferment starch in *Saccharomyces* gene polymorphism. *Mol.Gen.Genet.*164:205-209
3. Meier-Dörnberg T, Jacob F, Michel M, Hutzler M. 2017. Incidence of *Saccharomyces cerevisiae* var. *diastaticus* in the Beverage Industry: Cases of Contamination, 2008–2017. *MBAA TQ.* 54(4):140-148
4. Yamauchi H, Yamamoto H, Shibano Y, Amaya N, Saeki T. 1998. Rapid Methods for Detecting *Saccharomyces diastaticus*, a Beer Spoilage Yeast, Using the Polymerase Chain Reaction. *J. Am. Soc. Brew. Chem.* 56(2):58-63

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