

## Benefits of implementing proactive wild yeast quality management

- Sample to results in under 4 hours
- Early detection minimizes negative impacts on beer flavor and quality
- Simple and cost-efficient deployment
- Leverages the brewPAL Veriflow equipment and process

## Why brewDEK?

- Accurate and sensitive to the spectrum of wild yeast species that naturally occur in the brewing environment

## Why brewBRUX?

- Targeted monitoring of *Brettanomyces bruxellensis* for consistent levels when desired in select brews
- Detects cross-contamination if present

## Additional Detection Tools For Your Brewery

**brewPAL**  
Powered by Veriflow®

For *Pediococcus* & *Lactobacillus*

**brewMAP**  
Powered by Veriflow®

For *Megasphaera* & *Pectinatus*

## TEST PROTOCOL

### COLLECT

Collect a homogenous sample and centrifuge. Resuspend sample using provided proprietary Buffer A.

START - MINIMAL SAMPLE PREP



### DIGEST

Transfer resuspended sample into provided DIGEST reagent tube. Place tube into Thermocycler and run program.

50 MINUTE DIGEST



### AMPLIFY (PCR)

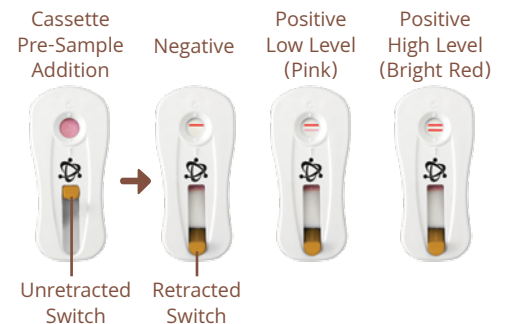
Transfer sample from DIGEST reagent tube into provided PCR reagent tube. Place tube into Thermocycler and run program.

2.5 HOUR AMPLIFICATION



### ANALYZE

Remove PCR Tube from Thermocycler and add proprietary Buffer B. Dispense PCR Tube contents onto test cassette window. Wait 3 minutes and retract test cassette switch to reveal test results. One line indicates negative result, two lines indicates semi-quantitative positive results. Use Signal Quantification Card or Veriflow Reader for precise quantification.



ITEM #	DESCRIPTION	SIZE
IS1028	brewDEK Complete Test System	1 Kit, 24 tests
IS1022	brewBRUX Complete Test System	1 Kit, 24 tests
IS1020	brewPAL Complete Test System	1 Kit, 24 tests
IS0904	Veriflow Loading Tray	1 Unit
ISTC002	Veriflow Thermocycler	1 Unit
ISRD001	Veriflow Reader – optional, for quantified results	1 Unit

**For more information or to place an order, please contact Invisible Sentinel at 215.966.6118 or [www.invisiblesentinel.com](http://www.invisiblesentinel.com)**

Invisible Sentinel, a global molecular solutions company, is dedicated to providing first-in-class microbial detection tools. The company's core technology, Veriflow, is a patented, game-changing platform that integrates molecular diagnostics, antibody design, and immunoassays. Veriflow has been applied across multiple industries including food safety and beverage quality.

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**INVISIBLE SENTINEL**



For Dekkera/Brettanomyces Species



For Brettanomyces Bruxellensis



# Managing wild yeast proactively at your brewery

**Sample to results in under 4 hours**



## On-site testing for wild yeast species to protect the quality of your brews

Veriflow DNA Signature Capturing Technology	
DNA Amplification	Proprietary reagents eliminate need for sample purification
DNA Identification	Proprietary DNA signature detection specifically targeting beer spoilers
Visualization of Results	Proprietary vertical flow mediated visualization of results for easy interpretation
Sample Preparation	No enrichment or purification steps required

### THE SYSTEM

#### Simple and cost efficient deployment at your brewery.

The Veriflow system is comprised of a small customized thermocycler, pre-aliquoted PCR reagent tubes, and proprietary buffers. Semi-quantitative results are obtained in less than 4 hours via hand-held disposable cassettes.



### THE CHALLENGE

#### Wild yeast can be a friend or an enemy in brewing.

Naturally-occurring wild yeast is innately challenging to manage in the process of making beer. Some strains of wild yeast from the *Dekkera/Brettanomyces* species are purposefully pitched in selected beer styles to achieve distinctive flavor profiles. However, wild yeast is never desirable when it appears unexpectedly. Wild yeasts can produce a wide variety of undesired flavors and inconsistent quality - resulting in a final product that fails to meet your standards or intended flavor profile.

### THE TECHNOLOGY

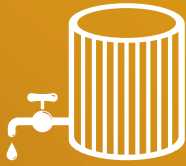
#### Proven rapid detection tools puts quality assurance into the hands of the brewer.

brewDEK and brewBRUX are powered by Veriflow – a game-changing platform technology that combines proven diagnostic principles for microbial detection and innovative, first-in-class scientific approaches.

The Veriflow platform has been widely adopted by craft brewers across the US using brewPAL for rapid and accurate detection of beer spoilage organisms *Pediococcus* & *Lactobacillus*. Veriflow technology is AOAC International Certified for foodborne pathogen detection, and is used globally by food manufacturers and global 3rd party testing labs. Premium wineries in North America, Europe, Australia and New Zealand have embraced the vinoBRETT assay for early detection and management of *Brettanomyces* in wine-making.

# Wild yeast detection tools can be utilized in many applications

Bright Tanks



Barrels



Packaged Product



Facility



## THE BENEFITS

**Knowledge of the presence of wild yeast is critical to ensure consistency and quality.**

Whether you're using *Dekkera/Brettanomyces* species in your intentionally inoculated brands or protecting your "clean" ones – early detection provides brewers the opportunity to manage and produce a consistent, quality, flavorful brew every time.



SHOWN ACTUAL SIZE  
2.75" x 1.25"

## WILD YEAST MANAGEMENT TOOLS

	brewDEK	brewBRUX
Description	Accurate and sensitive to species in the <i>Dekkera</i> (also known as <i>Brettanomyces</i> ) genus that are naturally-occurring in brewing and barrel vessels.	Targeted measurement of <i>Brettanomyces Bruxellensis</i> species and sub-species
Key benefits	<ul style="list-style-type: none"> <li>• Early detection allows for proactive monitoring of wild yeast in the facility</li> <li>• Minimize potentially negative impacts on beer flavor and quality</li> </ul>	<ul style="list-style-type: none"> <li>• Manage consistency in intentionally-inoculated brews</li> <li>• Reduce the risk of cross-contamination</li> </ul>
Matrix compatibility	Beer, colony PCR, environmental	Beer, colony PCR, environmental
Specificity	<i>Brettanomyces/Dekkera</i> species: <i>B. bruxellensis</i> , <i>B. anomala</i> , <i>B. naardenensis</i> , <i>B. custersiana</i>	<i>Brettanomyces/Dekkera bruxellensis</i>
Assay configuration	Qualitative	Qualitative and quantitative

“We use Invisible Sentinel’s tests in our yeast management system as a critical process control point. Since we have wild and sour beers on site, along with multiple yeast strains, the speed of the assay allows us to quickly and efficiently monitor our production flow so we can detect any potential cross-contamination as early as possible.”

- Eli Kolodny, QA/QC Manager  
Odell Brewing Company

“We really enjoy how fast and accurate the brewBRUX kit helps us determine the presence of *Brettanomyces* in our spirit barrel-aged brands and barrel-aged blends. It gives us confidence in our ability to manage wild yeast before blending and packaging these carefully-crafted brews.”

- Rick Blankemeier, Quality Assurance Manager  
Stone Brewing