THE CHALLENGE
Lack of Detection Tools Combining Specificity, Speed and Accessibility

You take every precaution to maintain the quality of your brews – and test as you go to ensure your standards are met. One major challenge is the lack of immediate, accurate and actionable test information throughout the brewing process. Traditional testing methods are dated, and limited by wait times and the inconclusive results of plating, or the expense and complexity of conventional molecular technologies.

THE TECHNOLOGY
Proven Platform Delivers Speed, Accuracy and Sensitivity

Invisible Sentinel brew products are powered by Veriflow – a game-changing platform technology that combines proven diagnostic principles for microbial detection and innovative, first-in-class scientific approaches. Veriflow technology offers unparalleled performance with no compromise on ease-of-use or affordability.

brewPAL FOR HOP-RESISTANT PEDIOCoccus AND LACTOBacillus

Improve Quality Processes to Ensure the Integrity of your Brand

brewPAL is the only Pediococcus and Lactobacillus detection tool with proven accuracy, unmatched ease of use and quantitative testing data available in less than 3 hours from sample collection – providing actionable results that enable you to optimize your quality processes.

• Prevents processing, bottling and shipping at risk
• Allows traceability to the point of contamination
• Reduces the risk of further contamination
• Protects against recall of tainted beer
• Protects your brewery’s brand

<table>
<thead>
<tr>
<th>brewPAL Performance Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity (LOD)</td>
</tr>
<tr>
<td>Time to Results</td>
</tr>
<tr>
<td>Matrix Compatibility</td>
</tr>
<tr>
<td>Assay Configuration</td>
</tr>
<tr>
<td>Target Selection</td>
</tr>
<tr>
<td>Specificity</td>
</tr>
</tbody>
</table>

Veriflow DNA Signature Capturing Technology

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

**DETECTION IS SIMPLE AND FAST**

**COLLECTION**
Collect sample and centrifuge. Resuspend sample using provided proprietary Buffer A.

**START - MINIMAL SAMPLE PREP**
Spin 10 Minutes

**AMPLIFY**
Transfer 5 ul of resuspended sample into provided PCR reagent tube. Place tube into Thermocycler and run program.

**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.

**ITEM #** | **DESCRIPTION** | **SIZE**
--- | --- | ---
IS1020 | brewPAL Complete Test System | 1 Kit, 24 Tests
IS0904 | Veriflow Loading Tray | 1 Unit
ISTC002 | Veriflow Thermocycler | 1 Unit
ISRD001 | Veriflow Reader | 1 Unit

---

“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.

Invisible Sentinel®, Veriflow®, and respective logos are registered trademarks in the US Patent and Trademark Office. brewPAL™, brewBRUX™, brewDEK™, brewMAP™, brewLAP™, and brewSTAT™ respective logos are trademarks of Invisible Sentinel, Inc. ©2017 Invisible Sentinel   #ISMA013

---

“Invisible Sentinel is robust enough to detect Pediococcus and Lactobacillus, even in high biomass samples like yeast slurries that may be re-used for multiple generations and brews."

– Mike Guilford, Production Manager
Russian River Brewing Company

“Earlier detection in the brewing process allows for effective remediation steps. brewPAL can pinpoint problematic bacteria even before high krausen of fermentation is reached."

– Zachary Miller, Yeast and Fermentation Manager
Victory Brewing Company

“As a definitive quality assurance assay with the high sensitivity you need to ensure your beer is free of spoilage bacteria, brewPAL is peace of mind against a potential recall situation."

– Chris Reilly, QA/QC Lab Manager
Weyerbacher Brewing Company

---

**ADDITIONAL TOOLS FOR YOUR BREWERY**

brewLAP™
For Lactic Acid-Producing Microbes

brewDEK™
For Brettanomyces/Dekkera species

brewBRUX™
For Brettanomyces Bruxellensis

brewMAP™
For Megasphaera & Pectinatus

brewLAP™
For Saccharomyces Diastaticus

For more information or to place an order, please contact Invisible Sentinel at 215.966.6118 or www.invisiblesentinel.com