



TEST PROTOCOL DETECTION IS SIMPLE AND FAST

COLLECTION

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

START - MINIMAL SAMPLE PREP



AMPLIFY

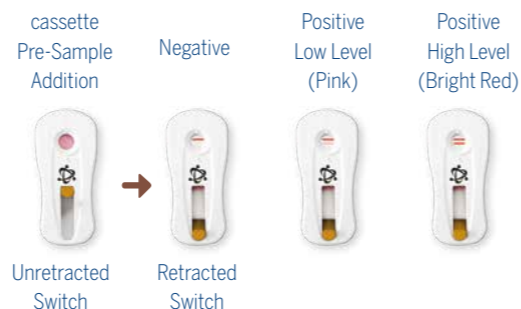
Transfer 5 µl of resuspended sample
into provided PCR reagent tube.
Place tube into Thermocycler
and run program.





2.5 HOUR AMPLIFICATION



ANALYZE

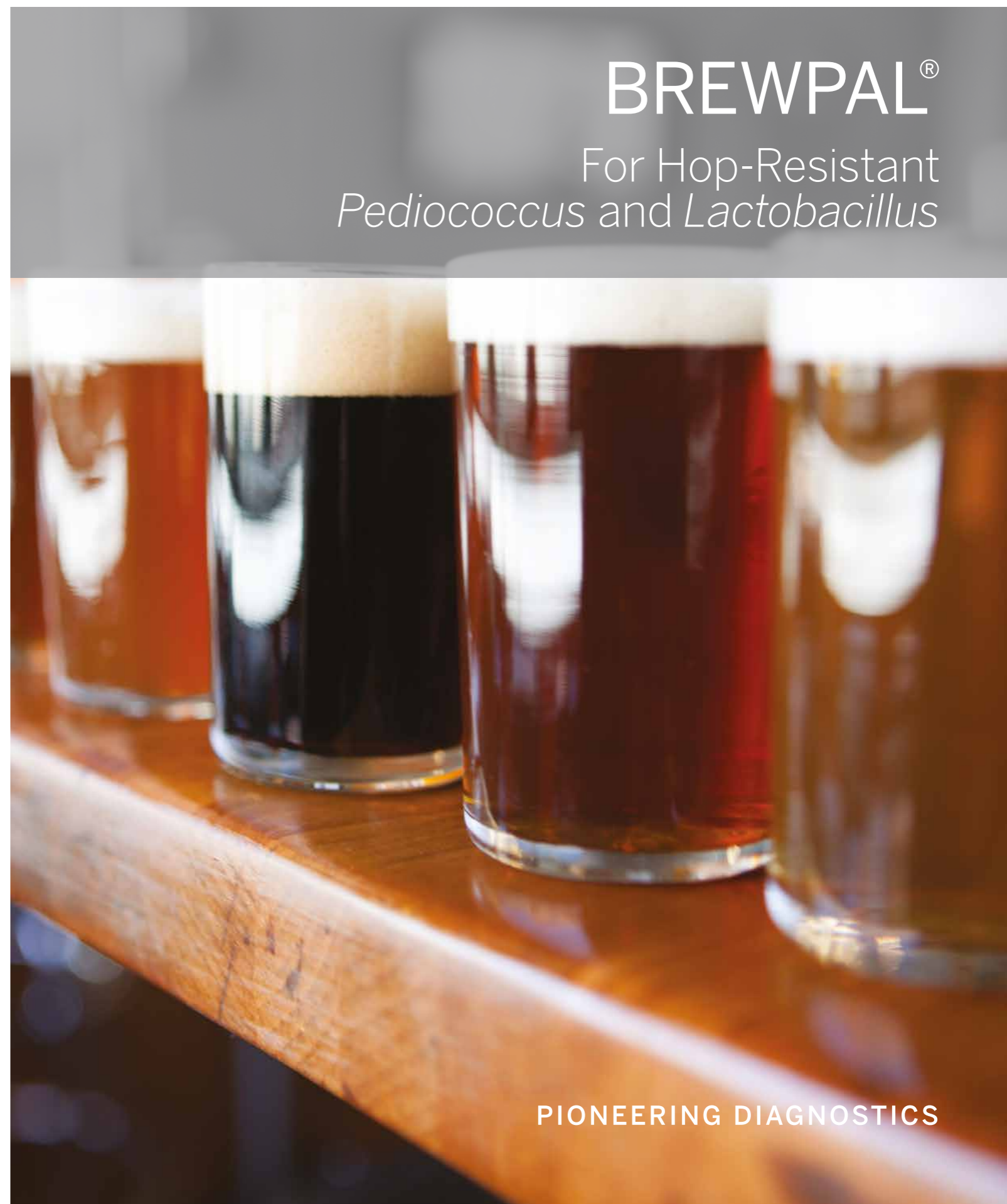
Remove PCR Tube from Thermocycler
and add proprietary Buffer B. Dispense
PCR Tube contents onto test cassette
window. Wait 3 minutes and retract test
cassette switch to reveal test results.
One line indicates negative result, two
lines indicates semi-quantitative posi-
tive results.



ITEM #	DESCRIPTION	SIZE
IS6020	 BREWPAL Complete Test System	1 Kit 24 Tests
ISTC002	 Veriflow Thermocycler	1 Unit
IS0904	 Veriflow Loading Tray	1 Unit
ISRD001	 Veriflow Reader (optional)	1 Unit

BREWPAL®

For Hop-Resistant
Pediococcus and *Lactobacillus*



PIONEERING DIAGNOSTICS

ADDITIONAL TOOLS FOR YOUR BREWERY



For Lactic Acid-Producing
Microbes



For *Brettanomyces/Dekkera*
species



For *Brettanomyces Bruxellensis*



For *Megasphaera et Pectinatus*



For *Saccharomyces Diastaticus*

Game-Changing Suite of Detection Tools

**Sample to Result in Under 3 Hours —
Empowering a Proactive Approach to Quality at Your Brewery**

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.

BREW PAL 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



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
Current utilization	Food and juice manufacturers, premium wineries, craft breweries; global 3rd party testing labs; U.S. and international

BREW PAL PERFORMANCE SPECIFICATIONS

Sensitivity (LOD)	10 cells/ml
Time to Results	< 3 hours
Matrix Compatibility	Beer, yeast slurry, colony PCR, environmental, liquid culture
Assay Configuration	Qualitative & quantitative
Target Selection	<i>Pediococcus</i> and <i>Lactobacillus</i> -specific hops resistance genes <i>horA</i> and <i>horC</i>
Specificity	<i>Pediococcus</i> : <i>P. damnosus</i> , <i>P. inopinatus</i> , <i>P. parvulus</i> , <i>P. pentosaceus</i> , <i>P. acidilactici</i> , <i>P. claussenii</i>
	<i>Lactobacillus</i> : <i>L. buchneri</i> , <i>L. brevis</i> , <i>L. rhamnosus</i> , <i>L. jensenii</i> , <i>L. backii</i> , <i>L. para-collinoides</i> , <i>L. lindneri</i> , <i>L. delbrueckii</i> , <i>L. fructivorans</i> , <i>L. acetotolerans</i> , <i>L. rossiae</i> , <i>L. plantarum</i>



“brewPAL is robust enough to detect *Pediococcus* and *Lactobacillus*, even in high bio-mass 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