

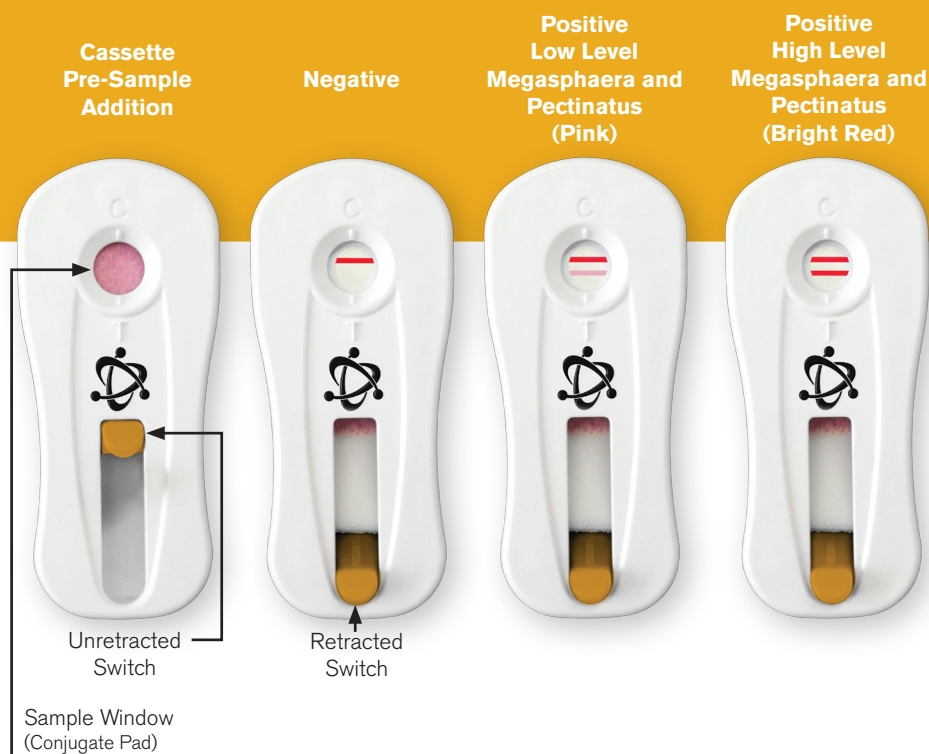
APPENDIX 1: ASSAY APPLICABILITY

brewMAP[®] has been validated for the detection of *Megasphaera* and *Pectinatus* species capable of causing spoilage in beer. It is intended to be used on final brewery products and samples from each step in the brewing process.

APPENDIX 2: RESULTS INTERPRETATION



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MOLECULAR DIAGNOSTICS
IN THE PALM OF YOUR HAND[®]



The control line, as indicated by the letter C on the *brewMAP*[®] cassette, should always develop. The test line, as indicated by the letter T on the *brewMAP*[®] cassette, will only develop in the event of a positive sample for *Megasphaera* and *Pectinatus* species. If the control line fails to develop, the test is invalid, and will need to be repeated.

APPENDIX 3: DISPOSAL

Invisible Sentinel devices are for single use only. Decontaminate all surfaces, media and reagents and discard in accordance with local, state, and federal regulations.

ASSAY PRINCIPLES

brewMAP[®] is a molecular based assay for the semi-quantitative detection of *Megasphaera* and *Pectinatus* species capable of causing spoilage in brewery products. The assay utilizes a PCR detection method coupled with a rapid, visual, flow-based assay that develops in 3 minutes post PCR amplification, and generates results without enrichment or DNA purification. *brewMAP*[®] eliminates the need for gel electrophoresis or fluorophore- based detection of target amplification and provides same day results in under 3 hours. Ultimately, *brewMAP*[®] provides the specificity and sensitivity of PCR based amplification in a cost-effective and easy-to-use format.

INTENDED USER

brewMAP[®] is intended for use by personnel familiar with basic sample collection and preparation techniques associated with spoilage organism detection during fermentation and bottling. *brewMAP*[®] is specifically designed to be easy-to-use and eliminates the need for advanced training in molecular biology.

Invisible Sentinel[®] is trademarked by Invisible Sentinel, Inc., of Philadelphia, PA. U.S. Patent No. 8,183,059, 8,476,082 and patents pending. Purchase and use of this product is subject to Invisible Sentinel's Terms and Conditions of Sale located at <http://www.invisiblesentinel.com>.



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MATERIALS PROVIDED

1. IS *brewMAP*[®] PCR Tube – Cat. No. IS530200
2. IS Buffer A – Cat. No. IS0701
3. IS Buffer B – Cat. No. IS0702
4. IS *brewMAP*[®] Assay Cassette – Cat. No. IS0121

MATERIALS NEEDED

1. Invisible Sentinel SimpliAmp PCR Thermocycler – Cat. No. ISTC002
2. Centrifuge compatible with 50 mL conical tubes, capable of 3000 x g
3. Pipettes and tips capable of 5 µL, 200 µL and 250 µL volume transfers
4. 50 mL conical tubes (capable of being centrifuged at 3000 x g)

STORAGE OF MATERIALS

The *brewMAP*[®] kit components, including cassettes and buffers (Buffer A and B) should be stored at room temperature (20-25°C). The *brewMAP*[®] PCR Tubes should be stored at -20°C ± 1°C.

PRECAUTIONS

1. Assay users should observe standard microbiological practices and safety precautions when performing this assay.
2. Do not use *brewMAP*[®] kit past indicated expiration date.
3. Deviations from the assay protocol may impact overall test performance.
4. Do not retract cassette switch until steps 1 through 5 of the Cassette Sample Analysis section have been completed as directed.

BEER SAMPLE PREP and PCR

1. Transfer 25 mL of beer sample to a 50 mL conical tube.
2. Centrifuge 50 mL conical tube with sample for 10 minutes at 3000 x g.
3. Decant supernatant from 50 mL conical tube (be careful not to disturb pellet).
4. Resuspend pellet in 50 mL conical tube with 250 µL of Buffer A. Mix until the pellet is no longer visible.
5. Transfer 5 µL from resuspended pellet in 50 mL conical tube generated in step 4 to *brewMAP*[®] PCR Tube.
 - a. Open *brewMAP*[®] PCR Tube only when adding sample and promptly close after, to avoid cross-contamination between tubes.
6. Place *brewMAP*[®] PCR Tube into IS PCR Thermocycler, select “brewMAP” program and press “START RUN”, as directed by the Thermocycler User Guide.
7. Upon completion of “brewMAP” program, press “STOP RUN,” and proceed to Cassette Sample Analysis section step 1.

CASSETTE SAMPLE ANALYSIS

1. Remove tubes from IS PCR Thermocycler and add 4 drops of Buffer B directly to each *brewMAP*[®] PCR Tube.
2. Transfer entire contents (200 µL) of *brewMAP*[®] PCR Tube directly to *brewMAP*[®] cassette sample window with pipette. A separate *brewMAP*[®] cassette must be used for each *brewMAP*[®] PCR Tube.
3. Allow *brewMAP*[®] cassette to develop for 2 minutes ± 15 seconds.
4. Add 4 drops of Buffer B directly to each *brewMAP*[®] cassette sample window.
5. Allow *brewMAP*[®] cassette to develop for 1 minute ± 15 seconds.

- a. Note: *brewMAP*[®] cassette can be developed for up to 120 min before proceeding to step 6.
6. Retract *brewMAP*[®] cassette switch and record results.
 - a. The appearance of one red line (control) in the *brewMAP*[®] cassette sample window indicates a negative result.
 - b. The appearance of two red lines (control and test) in the *brewMAP*[®] cassette sample window indicates a positive result.
 - i. Test line intensity indicates semi-quantitative levels of *Megasphaera* and *Pectinatus* species. (See Appendix 2).

CUSTOMER SERVICE

Invisible Sentinel customer service and technical assistance can be reached Monday-Friday between 9AM and 5PM Eastern Standard Time by calling 215-966-6118 and asking for an Invisible Sentinel sales or technical representative. Training on this product and all Invisible Sentinel test kits is available.

MSDS INFORMATION AVAILABLE

Material Safety Data Sheets (MSDS) are available for this test kit and all of Invisible Sentinel's test kits by calling Invisible Sentinel at 215-966-6118.

