Foodborne Bacteria

Soleris™

How Soleris Works

Classic microbiology meets modern technology

The Soleris system is a rapid optical system for the detection of microbial contamination based on an innovative application of classic microbiology. The optical assay measures microbial growth by monitoring pH and other biochemical reactions that generate a color change, as microorganisms in the broth grow and metabolize nutrients. The results are monitored by the system providing an alert for samples that are out of specification.

Sensitivity ranges from a single organism per vial to10^8 CFU/mL (upper limit).

The Soleris Technology

The Soleris technology monitors changes in the chemical characteristics of microbial liquid growth medium and detects microorganisms with pH and other sensitive reagents. The reagents change their spectral patterns as the metabolic process takes place. These changes are detected photometrically by an optical instrument and monitored at predetermined time intervals.

The key to the technology is the monitoring of these changes in a semi-fluid zone of the patented organism-specific vial (see right). This zone is separated from the liquid medium, thereby eliminating the masking of the optical pathway by the product, or microbial turbidity. Changes in color, expressed as optical units, are sensed by the optical sensor and recorded in the computer. Sample volumes of up to 5 mL can be used. Various dyes, which are indicators of metabolic activity such as pH, redox, and enzymatic activity can be utilized in the system.

Because of its design, the system can be utilized in conjunction with swabs, sponges and filters to assess the levels of various groups of organisms as a critical control point on equipment, floors, and the environment. Soleris' advantage over ATP is that it measures presence of specific groups of bacteria, indicating problems in a timely manner.

AOAC Certification

The Soleris Coliform Test received AOAC certification for a variety of foods. The Soleris has shown to detect all coliforms (*Escherichia*, *Citrobacter*, *Enterobacter*, and *Klebsiella*). The Soleris test demonstrated ruggedness, as variation in sample volume, broth volume in the vial, incubation temperature and sample temperature had insignificant changes in detection times. There was reliable consistency in detection times obtained when using different lots of manufactured vials. Old lots had the same microbiological performance as new lots. The Soleris tests were ***considerably shorter in duration*** than the standard BAM reference method for all levels of bacteria tested. The Soleris showed reproducibility and repeatability similar or better to those obtained by the standard method. There was good agreement between the results of the Soleris results and the standard methods with correlation coefficients of 0.96-0.99.

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Automated Optical System 128 Sample Count

The Soleris 128 model is designed for multi-purpose users with four independent incubators. Each incubator can be set to a different temperature which is important when simultaneously running tests with different temperature requirements (e.g., coliform at 35°C and mold at 25°C). The system has no moving parts and delivers accuracy and reproducibility similar to, or better than, results produced by standard methods.

Each of the samples placed into the system are independent of one another. This allows for maximum flexibility for the workflow needs of the lab.

System Specifications

Incubator's temperature range:	15-60°C
Temperature control:	± 0.5°C, regardless of ambient temperature

Ordering Information

Prod.#	Product description
BS-128	Soleris 128 System with computer
BSX-128	Soleris 128 System without computer

Automated Optical System 32 Sample Count

The user-friendly Soleris 32 is an ideal system for low volume testing at a single temperature. For reliable, rapid test results, the Soleris 32 provides the same sensitivity of the Soleris 128. The lightweight system has no moving parts and delivers accuracy and reproducibility similar to, or better than, results produced by standard methods.

Each of the samples placed into the system are independent of one another. This allows for maximum flexibility for the workflow needs of the lab.

System Specifications

Incubator's temperature range:	15-60°C
Temperature control:	± 0.5°C, regardless of ambient temperature

Ordering Information

Prod.#	Product description
BS-32	Soleris 32 System with computer
BSX-32	Soleris 32 System without computer

Foodborne Bacteria

Soleris™

Soleris Software

One of the most significant features of the Soleris system is its software, specially designed to provide the following functions:

- Simultaneous control of up to 8 Soleris instruments
- Real-time data analysis of the optical data received from the instruments and samples
- Automatic detection of presence/absence of organisms
- Automatic conversion of detection times (DT) to CFU concentrations
- Providing early alarms for contaminated samples (above a user defined specification)
- Generating various reports including graphical trend analyses
- Communicating the results and alarms over networks and phone lines via Soleris' connectivity software
- Interfacing to individual customers' Laboratory Information Management Systems (LIMS)

The Soleris software, embedded in a Windows® based PC, collects the optical data of the test vials (up to 1024) every 6 minutes. The dynamic pattern of each test vial is analyzed in real time to provide instantaneous determinations of presence and concentrations of active microorganisms. An internal detection algorithm is activated for each individual test vial based upon the specific customer's products and associated tests. Internally embedded calibration functions automatically convert detection times to CFU concentrations. All results are automatically archived in a history file to provide audit trails and generate reports and trend analyses.

Ordering Information

Prod.#	Product description
Inquire	Soleris Software
Inquire	Soleris Connectivity

Foodborne Bacteria

Soleris™

Direct Vials for Indicator Organisms

Intended Use

Soleris Direct Vials are used as a screening method for detection of a variety of indicator and spoilage organisms.

The Test

The patented Soleris vial combines a unique structure and proprietary principles to allow an LED and photo detector to monitor color changes without interference by sample particles or turbidity. This makes Soleris a valuable diagnostic tool for "real-time" detection of a wide range of microorganisms in a variety of products.

The Soleris vial is unique with a semifluid layer, located at the bottom of the vial, through which optical measurements are performed. Above the semifluid layer, liquid growth media and appropriate dye(s) are present. The sample is added to the liquid broth. In the liquid broth the product particles mix with the media and dyes to yield a non-clear solution. The lower portion of the vial however, is not influenced by the sample, since only small molecules and ions can diffuse to the semifluid layer. This creates a clear window that allows precise optical measurements of changes in color due to microbial growth. The instrument measures the optical properties of the window every 6 minutes.

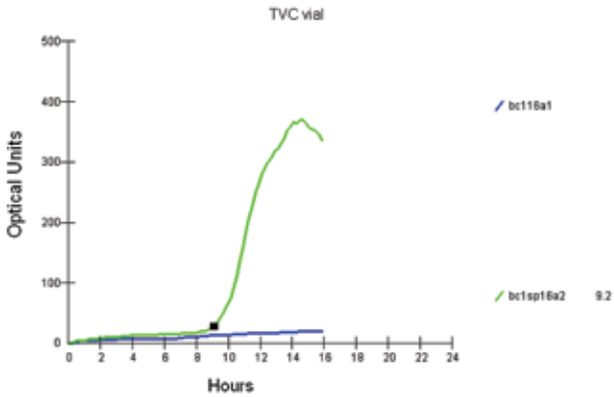
The Procedure

1. Determine product specification (e.g. <10, <1000, etc.).
2. Dilute sample 1:10 in sterile PBS or your preferred buffer.
3. Add appropriate volume of diluted sample to vial, OR place environmental swabs, sponges or filters directly into vial.
4. Start test using Soleris software.

Product Specifications

Testing time:	4-48 hours
Tests per kit:	100

Results



Materials Required But Not Provided

Available from Neogen

1. Soleris Automated System
2. Sterile PBS dilution bottles (BPB-94)
3. Adjustable pipette 1 mL
4. Tryptone (Indole) broth confirmation (TT-123)
5. Kovac's reagent (KO-122)

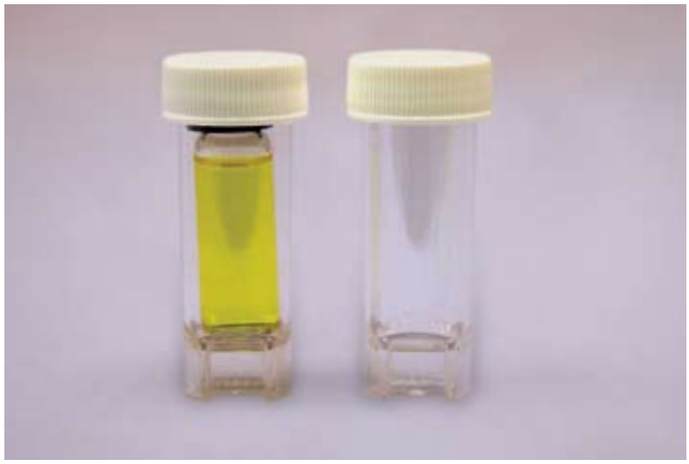
Ordering Information

Prod.#	Product description
CC-102	Coliform Medium 5 mL
CC-109	Coliform Medium 9 mL
CC-BP9	Coliform Medium Buffered 9 mL
EC-104	*E. coli* Medium
EB-105	Enterobacteriaceae Medium
LB-1111	Lactic Acid Medium
LB-1112	Lactic Acid Medium Green
BV-108A	*Listeria* Vial 5 mL
BV-108B	*Listeria* Vial 10 mL
SM-118	*Staphylococcus aureus* Medium
SI-118B	*Staphylococcus aureus* Supplement
NB-100	Total Vial Count
YC-106	Yeast Dairy Medium
YCA-106A	Yeast Acid Food Medium

Foodborne Bacteria

Soleris™

Vial-in-Vial for Spoilage and Indicator Microorganisms



Intended Use

Soleris in Vial-in-Vial (ViV) are used as a screening method for detection of a variety of indicator and spoilage organisms.

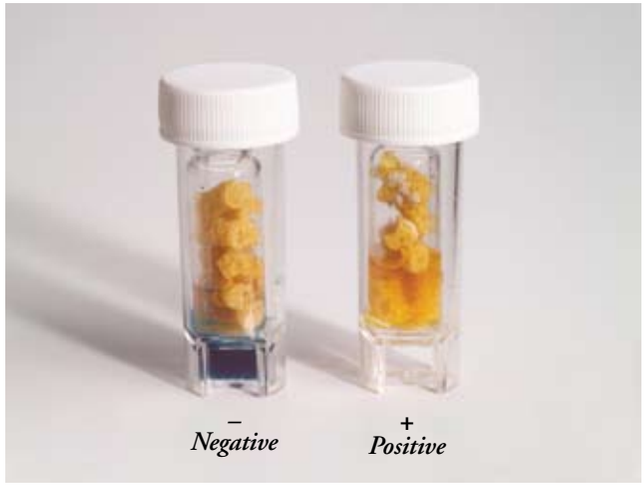
The Test

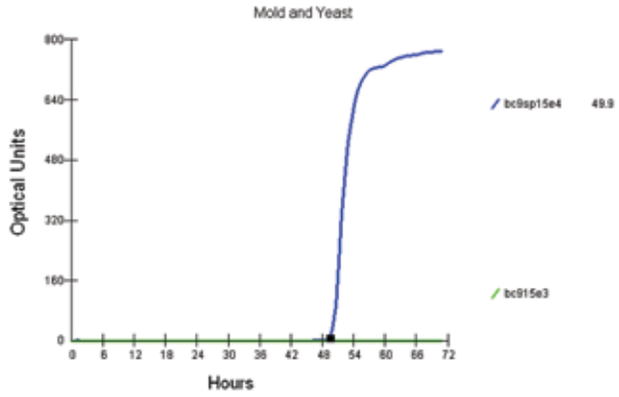
The ViV has an internal and an external vial. The organisms grow in the liquid media in the internal vial and generate carbon dioxide gas from their metabolic activity. The internal vial is placed unsealed in the external vial, allowing the generated gas released from the internal container to fill the head space of the external vial. The carbon dioxide that is generated interacts with the KOH compound to lower its pH, causing the dye indicator in the optical window to change from purple to colorless.

The Procedure

1. Determine product specification.
2. Dilute sample 1:10 in sterile PBS or your preferred bottle.
3. Add supplement if required to inner vial.
4. Add appropriate volume of diluted sample to inner vial.
5. Add mold indicator to outer vial.
6. Gently place uncapped inner vial into Soleris vial with indicator.
7. Tightly close cap.
8. Place Vial-in-Vial into Soleris system.
9. Start test using Soleris software.

Results





Product Specifications

Testing time:	48-72 hours
Tests per kit:	100

Materials Required But Not Provided

Available from Neogen

1. Soleris Automated System
2. Sterile PBS dilution bottles
3. Yeast and mold supplement
4. Mold indicator

Ordering Information

Prod.#	Product description
MI-114	Mold Indicator
MA-113	Mold Vial Assembly
VIV-123	Vial-in-Vial VHT
VIV-117	Vial-in-Vial Sterility
VIV-125	Vial-in-Vial *Pseudomonas*
YI-110B	Yeast and Mold Supplement

Foodborne Bacteria

Soleris™

For *Staphylococcus aureus*

Intended Use

Soleris *Staphylococcus* spp. vials are used as a screening method for detection of *Staphylococcus* microorganisms.

The Test

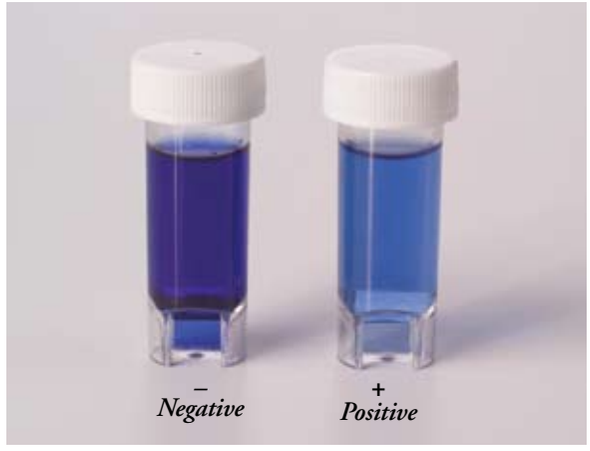
The patented Soleris vial combines a unique structure and proprietary principles to allow an LED and photo detector to monitor color changes without interference by sample particles or turbidity. This makes Soleris a valuable diagnostic tool for "real-time" detection of a wide range of microorganisms in a variety of products.

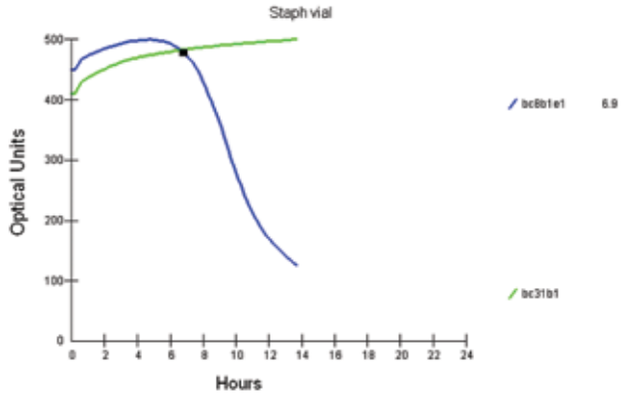
The Soleris vial is unique with a semifluid layer, located at the bottom of the vial, through which optical measurements are performed. Above the semifluid layer, liquid growth media and appropriate dye(s) are present. The sample is added to the liquid broth. In the liquid broth the product particles mix with the media and dyes to yield a non-clear solution. The lower portion of the vial however, is not influenced by the sample, since only small molecules and ions can diffuse to the semifluid layer. This creates a clear window that allows precise optical measurements of changes in color due to microbial growth. The instrument measures the optical properties of the window every 6 minutes.

The Procedure

1. Determine product specification. (e.g. <10, <1000, etc.)
2. Dilute sample 1:10 in sterile PBS or your preferred buffer.
3. Add appropriate volume of diluted sample to vial. OR place environmental swabs, sponges, filters or sample directly into vial.
4. Start test using Soleris software.

Results





Product Specifications

Testing time:	4-14 hours
Tests per kit:	100

Materials Required But Not Provided

Available from Neogen

1. Soleris Automated System
2. Sterile PBS dilution bottles (BPB-94)
3. Adjustable pipette 1 mL
4. Tryptic Soy Broth (7164A)

Ordering Information

Prod.#	Product description
SM-118	*Staphylococcus aureus* Medium
SI-118B	*Staphylococcus aureus* Supplement

Foodborne Bacteria

Soleris™

For Generic *E. coli* and Total Coliform

Intended Use

Soleris *E. coli* and Coliform Vials are used as a screening method for detection of a variety of Coliform organisms.

The Test

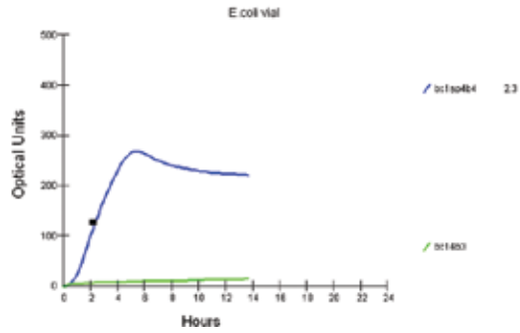
The patented Soleris vial combines a unique structure and proprietary principles to allow an LED and photo detector to monitor color changes without interference by sample particles or turbidity. This makes Soleris a valuable diagnostic tool for "real-time" detection of a wide range of microorganisms in a variety of products.

The Soleris vial is unique with a semifluid layer, located at the bottom of the vial, through which optical measurements are performed. Above the semifluid layer, liquid growth media and appropriate dye(s) are present. The sample is added to the liquid broth. In the liquid broth the product particles mix with the media and dyes to yield a non-clear solution. The lower portion of the vial however, is not influenced by the sample, since only small molecules and ions can diffuse to the semifluid layer. This creates a clear window that allows precise optical measurements of changes in color due to microbial growth. The instrument measures the optical properties of the window every 6 minutes.

The Procedure

1. Determine product specification (e.g. <10, <1000, etc.).
2. Dilute sample 1:10 in sterile PBS or your preferred buffer.
3. Add appropriate volume of diluted sample to vial, OR place environmental swabs, sponges, filters or sample directly into vial.
4. Start test using Soleris software.

Results



Product Specifications

Testing time:	4-14 hours
Tests per kit:	100

Materials Required But Not Provided

Available from Neogen

1. Soleris Automated System
2. Sterile PBS dilution bottles (BPB-94)
3. Adjustable pipette 1 mL
4. Tryptone (Indole) broth confirmation (TT-123)
5. Kovac's reagent (KO-122)
6. Tryptic Soy Broth (7164A)

Ordering Information

Prod.#	Product description
CC-102	Coliform Medium 5 mL
CC-109	Coliform Medium 9 mL
CC-BP9	Coliform Medium Buffered 9 mL
EC-104	*E. coli* Medium

Foodborne Bacteria

Soleris™

For Total Viable Count (TVC)

Intended Use

Soleris Total Viable Count Vials are used as a screening method for detection of a variety of indicator and spoilage organisms.

The Test

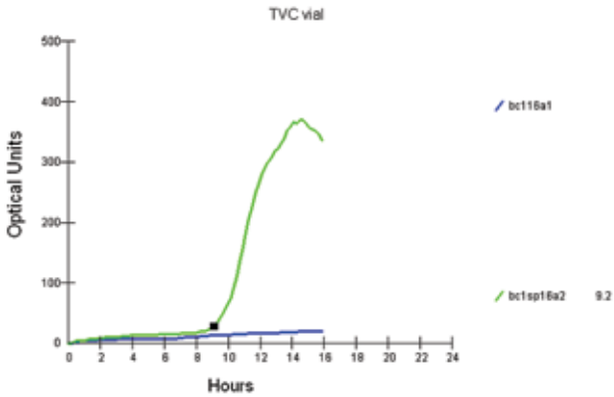
The patented Soleris vial combines a unique structure and proprietary principles to allow an LED and photo detector to monitor color changes without interference by sample particles or turbidity. This makes Soleris a valuable diagnostic tool for "real-time" detection of a wide range of microorganisms in a variety of products.

The Soleris vial is unique with a semifluid layer, located at the bottom of the vial, through which optical measurements are performed. Above the semifluid layer, liquid growth media and appropriate dye(s) are present. The sample is added to the liquid broth. In the liquid broth the product particles mix with the media and dyes to yield a non-clear solution. The lower portion of the vial however, is not influenced by the sample, since only small molecules and ions can diffuse to the semifluid layer. This creates a clear window that allows precise optical measurements of changes in color due to microbial growth. The instrument measures the optical properties of the window every 6 minutes.

The Procedure

1. Determine product specification (e.g. <10, <1000, etc.).
2. Dilute sample 1:10 in sterile PBS or your preferred buffer.
3. Add appropriate volume of diluted sample to vial, OR place environmental swabs, sponges, filters or sample directly into vial.
4. Start test using Soleris software.

Results



Product Specifications

Testing time:	4-18 hours
Tests per kit:	100

Materials Required But Not Provided

Available from Neogen

1. Soleris Automated System
2. Sterile PBS dilution bottles (BPB-94)
3. Adjustable pipette 1 mL

Ordering Information

Prod.#	Product description
NB-100	Total Vial Count

Soleris™

Vial-in-Vial for Yeast and Mold

Intended Use

Soleris Yeast and Mold Vial-in-Vials (ViV) are used as a screening method for detection of a variety of yeast and mold spoilage.

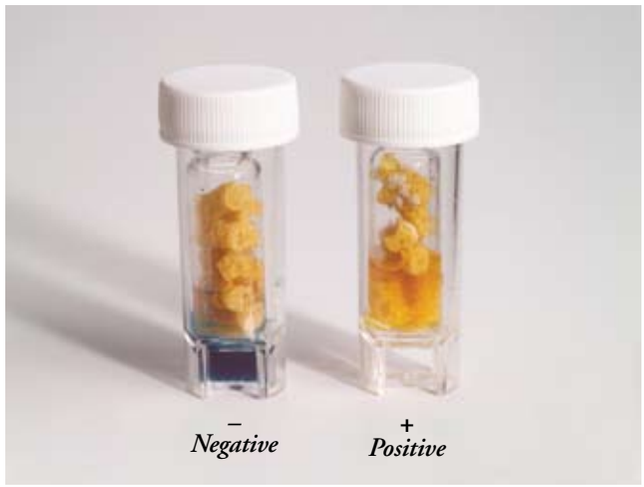
The Test

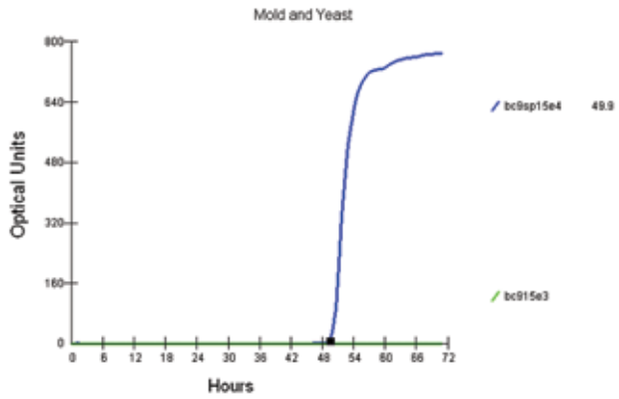
The Vial-in-Vial (ViV) has an internal and an external vial. The organisms grow in the liquid media in the internal vial and generate carbon dioxide gas from their metabolic activity. The internal vial is placed unsealed in the external vial, allowing the generated gas released from the internal container to fill the head space of the external vial. The carbon dioxide that is generated interacts with the KOH compound to lower its pH, causing the dye indicator in the optical window to change from purple to colorless.

The Procedure

1. Determine product specification.
2. Dilute sample 1:10 in sterile PBS or your preferred bottle.
3. Add supplement if required to inner vial.
4. Add appropriate volume of sample or diluted sample to inner vial.
5. Add mold indicator to outer vial.
6. Gently place uncapped inner vial into Soleris vial with indicator.
7. Tightly close cap.
8. Place Vial-in-Vial into Soleris system.
9. Start test using Soleris software.

Results





Product Specifications

Testing time:	4-72 hours
Tests per kit:	100

Materials Required But Not Provided

Available from Neogen

1. Soleris Automated System
2. Sterile PBS dilution bottles
3. Yeast and mold supplement (YI-110B)
4. Mold indicator (MI-114)

Ordering Information

Prod.#	Product description
MI-114	Mold Indicator
MA-113	Mold Vial Assembly
YI-110B	Yeast and Mold Supplement