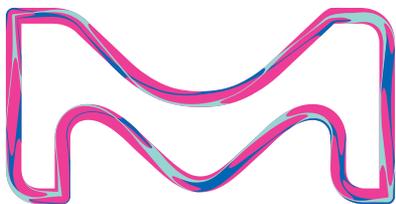


# Beef Microbiology Testing

Proven solutions and services for every step of your microbial testing workflow.



The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

**Millipore®**

Preparation, Separation,  
Filtration & Monitoring Products

# We are setting standards in the food industry

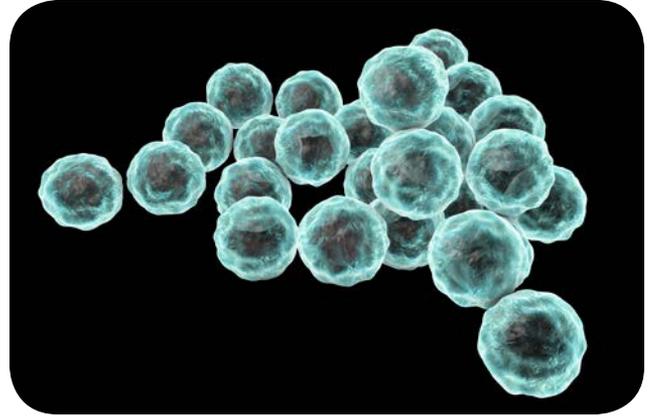
We provide products and services to support every step of your beef microbiology testing process. Our portfolio includes dehydrated and granulated culture media, ready-to-use agar plates, liquid media, as well as molecular (PCR) or immunological solutions for the specific detection of pathogens such as *Listeria*, *Salmonella*, *Campylobacter*, *E. coli*, or for quality indicator organism testing. We also have a comprehensive range of services and high-quality environmental monitoring solutions to help you keep your facilities safe for the convenient testing of surfaces, equipment, and air quality for contaminants—for rapid, reliable results and international standard compliance.

[SigmaAldrich.com/Food-Microbiology](https://www.sigmaaldrich.com/food-microbiology)



# Beef Testing: Accuracy Counts

We understand the need to ensure that your beef products are always of the highest quality, and free from harmful pathogens. We also understand that pathogen testing needs to be fast, accurate, and reliable in order for you to be successful. False positive results can cause unnecessary delays getting your product to market and false negatives could compromise your product quality leading to the unintentional release of contaminated product. When product quality is at stake, you can rely on our patented technology, our expert service, and our experience as the market leader in testing industry to help you succeed.



## Faster Results = Fresher Products

The beef industry is highly diverse, but there are three major requirements for safety testing methods that all producers have in common:



**Speed:** Fast isn't fast enough when it comes to beef safety testing. The product's perishability means that fast testing results are vital to the entire supply chain. Our proven solutions and rapid tests bring your testing workflow up to speed.



**Accuracy:** In every industry where consumer health is a concern, accuracy of test methods is key. Beef is partly consumed raw, creating a higher risk. Our experts are dedicated to ensuring reliable results.



**Sensitivity & specificity:** Whether you are producing beef trim, ground beef or organ meat, the detection methods used must be validated for each of these matrices to ensure they are performing optimally. Our compliant & validated solutions minimize risks to make your work more secure.

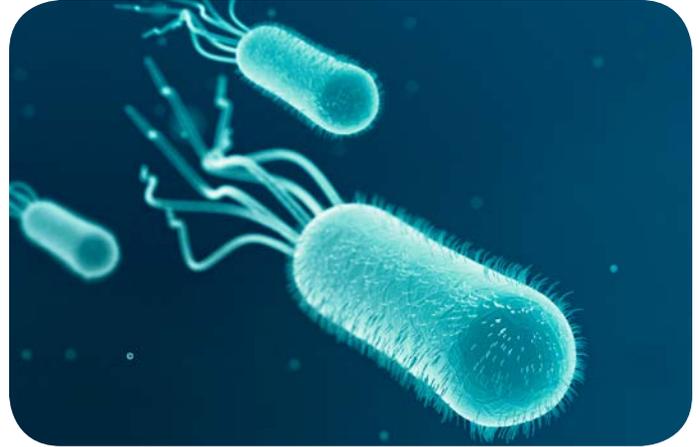
# Which are the most crucial microorganisms to test for in beef?

Bacteria found in cattle which are potentially pathogenic for humans include *Salmonella* spp., *Listeria monocytogenes*, Shiga-toxin producing *Escherichia coli* (STEC), and *Campylobacter* spp. To ensure the safety of beef, it needs to be tested for these microorganisms.

## Generic *E. coli*

*E. coli* are a diverse group of bacteria that live in the intestines and are shed in the feces of man and food producing animals. The presence of *E. coli* is an indicator of fecal contamination. The test procedure does not specifically recover *E. coli* O157 but does indicate the risk of contamination with this and other dangerous fecally derived bacteria.

For standardized testing of each of the microbial parameters listed, regulatory methods such as ISO, USDA-FSIS, or FDA-BAM describe the culture media and the workflow procedures. In addition, most countries also accept alternative methods if validated against ISO 16140 and/or AOAC standards.



[SigmaAldrich.com/Ecoli](https://www.sigmaaldrich.com/Ecoli)

## *E. coli* O157 and Shiga-toxin Producing *E. coli* (STEC)

The most common STEC is *E. coli* O157:H7, a virulent strain that is found in cattle, deer and other warm-blooded animals. The gastrointestinal tract of healthy ruminants seems to be an important reservoir for STEC and foods of bovine and ovine origin are frequently reported as a source for human STEC infections. Research shows that most cattle arriving to packing plants will test positive for *E. coli* O157:H7 on their hides and hooves. These incidence rates in cattle vary widely by season and region and USDA routinely samples ground beef for *E. coli* O157:H7. In addition to *E. coli* O157:H7, other serotypes including the TOP seven major STEC serogroups (O157, O26, O45, O103, O111, O121 and O145) are also relevant for the analysis of raw and ready-to-eat meat products, and laboratory environmental sponge samples.

USDA-FSIS describes both traditional and PCR-based methods for detection, isolation and identification of these pathogenic *E. coli* serogroups in the Microbiology Lab Guidebook section 5C.00. The International Organization for Standardization (ISO) specifies a horizontal method (ISO 16654:2001 and the amendment 1:2017) for the detection of *E. coli* O157 in food and animal feeding stuffs. This method is culture media based.

Both USDA-FSIS and ISO 16654 include an immunomagnetic isolation step (IMS) for improved detection of these pathogenic *E. coli*, especially if present in low numbers with high background flora. Detection of Shiga toxin-producing *E. coli* and the determination of O157, O111, O26, O103 and O145 serogroups is also described in the ISO/TS 13136:2012 which is published as a Technical Specification. It does not explicitly describe an IMS step but allows a serogroup-specific isolation using IMS if the presence of STEC is suspected in a sample.

**Listeria Monocytogenes** Steps must be taken to prevent contamination of meat products by *Listeria monocytogenes* at all levels of production. Given the fact that *L. monocytogenes* is so widespread in the environment, this is a difficult task and it is not possible to eliminate *L. monocytogenes* from the meat-processing environment or to eliminate the potential for contamination in precooked or ready-to-eat products. Today, the major food safety concern is that of recontamination of ready-to-eat or precooked foods after thermal processing. Examples of foods in which post-processing contamination has occurred and caused major listeriosis outbreaks include hot dogs and luncheon meats. Testing of beef samples and environmental samples are described in different regulatory standards.

Read our article about *Listeria monocytogenes*:  
[SigmaAldrich.com/Listeria-Survivor](https://sigmaaldrich.com/Listeria-Survivor)

## Salmonella

*Salmonella* is the most frequently reported cause of foodborne illness. A variety of raw and unprocessed foods have been found to carry *Salmonella* spp., including raw meat. There are over 2000 serotypes in the *Salmonella* family and all strains and species are pathogenic to humans. *Salmonella* can affect cattle in every stage of production, including pregnant cows, young calves and feedlot and adult cattle. *Salmonella* can be isolated from a huge number of potential sources, including inapparent carrier animals (cattle, dogs, birds, people, etc.), feeds, water and other places in the environment. *Salmonella* is transmitted primarily by the fecal-oral route. This means that fecal contamination of anything that will go into the mouth — water troughs, feed bunks, hay, etc. — is a very effective means to spread *Salmonella*. Less frequently, aerosol transmission can also occur. USDA-FSIS, FDA-BAM and ISO standards describe mostly traditional methods which significantly differ in the applied culture media.



Learn more about *Salmonella* contamination:  
[SigmaAldrich.com/Salmonella-Article](https://sigmaaldrich.com/Salmonella-Article)

## Quality Indicators

Raw meat and the associated environment should be subject to monitoring for indicators of process hygiene such as *E. coli* or coliforms/*Enterobacteriaceae*. The use of indicators such as *E. coli* and coliforms may give useful information about the hygienic quality of the material and deliver faster results. Demonstration of compliance with process hygiene criteria for meat and processed meat including beef is required as follows:

- **Total Viable Count and *Enterobacteriaceae*** – on cattle, sheep, goats, horses and pig carcasses (below specified limits).
- **Total Viable Count and *E. coli*** – in ground meat and mechanically separated meat (below specified limits).
- ***E. coli*** – in meat preparations (below specified limits).

## Enterobacteriaceae

The *Enterobacteriaceae* comprises a group of bacteria that live predominantly in the intestines of animals. The group includes most of the major food-borne pathogens of animal origin such as *Salmonella*, *Yersinia* and *E. coli* O157 and other STECs. The presence of these organisms on the surface of carcasses is an indicator of fecal and environmental contamination.

## Total Viable Counts (TVC)

This is a quantitative measure of bacteria in the sample that can survive in the conditions on the surface of carcasses or in processed meat that are harvested by the sampling procedure used to grow in the presence of air on an agar plate. These bacteria include those arising both from animals and from the slaughterhouse or meat processing environment.

Because TVC includes the organisms responsible for spoilage of meat, it will also give an indication of the stability of the meat.

# Food Sample Preparation

Accurate microbiology results are highly reliant upon the quality of your sample preparation.

## Sample Dilution

Our DiluCult™ automated gravimetric dilutor instruments with two integrated pumps are designed to facilitate work in a microbiological safety cabinet for samples of up to 5 kg. They are low in height and have a removable drip tray. Three modes of dispensing are available: a fast flow with minimum accuracy, a standard flow with standard accuracy, and a slow flow with optimal accuracy. Our DiluCult™ and DiluCult™ 2 instruments can be easily calibrated with a certified weight.



## Food Sample Homogenizer (Blender)

The Enrichment Sample Homogenizer (ESH) is used for the automated homogenization of food samples with enrichment media, the ESH has two removable and autoclavable massaging paddles for straightforward cleaning.

- Multi-function digital display & control panel
- Variable speed and time
- Adjustable blending power
- Side-by-side paddle stop
- Silent, brushless motor
- Security drip tray
- Removable autoclavable paddles



[SigmaAldrich.com/Microbial-SamplePrep](http://SigmaAldrich.com/Microbial-SamplePrep)

# Enrichment and Cultivation



Watch our video

## Dehydrated Culture Media

The superior granulation technology of our traditional dehydrated culture media meets the highest industry performance standards, while guaranteeing that our products provide maximum convenience and safety.

### GranuCult® ISO 11133: 2014 Compliant Granulated Culture Media

Our GranuCult® low-dust dehydrated culture media granules are compliant with EN ISO 11133:2014 standards, as well as individual ISO standards and FDA-BAM and USDA-FSIS methods for food and water sample testing. Our GranuCult® media are released through an ISO 17025 accredited QC lab. Regulatory compliance is clearly visible on the product label, in the technical datasheet and in the certificate of analysis.



[SigmaAldrich.com/DCM](http://SigmaAldrich.com/DCM)

## Ready-to-Use Culture Media

Our prepared and ready-to-use culture media products can save you time and resources, while ensuring that your media is fully compliant with the regulations relevant to your industry. Whether you need carry out pathogen testing or indicator organism testing in food, beverage or water samples, we have a full range of liquid media and pre-filled agar plates suitable for your needs.

[SigmaAldrich.com/RTU-Media](http://SigmaAldrich.com/RTU-Media)

### ReadyTube® Liquid Media

Our ReadyTube® ready-to-use media in tubes and bottles for isolation, enumeration or enrichment of microorganisms are compliant with EN ISO 11133:2014 and released by our ISO 17025 accredited quality control lab. The clear naming convention where the number indicates the volume in mL of media contained in each bottle or tube makes it simple (e.g. ReadyTube® 200—each bottle in the pack contains 200 mL of media).

## Certified Reference Microorganisms

### Vitroids™ and LENTICULE® Discs

Take the hassle out of your culture media performance testing and quality control. Our range of Vitroids™ and LENTICULE® Discs are certified reference materials that can help make your quality control tests quick, convenient and consistent. Provided as ready-to-use discs in convenient CFU levels, there is virtually no prep needed: simply place the disc onto or into the media of your choice, rehydrate for 10 minutes, and process as normal. It's as easy as that.

Streamline your media performance testing and daily quality control:

- Ready-to-use at convenient CFU ranges
- No dilution required
- Quick rehydration in 10 minutes
- 1+ year shelf life in standard -20 °C freezer
- Complete with comprehensive certificate of analysis
- Double accreditation to ISO 17034 and 17025



[SigmaAldrich.com/Anaerocult](http://SigmaAldrich.com/Anaerocult)



Use for media performance testing, method development and validation, process quality control and for employee training and proficiency testing.

[SigmaAldrich.com/MiBi-CRM](http://SigmaAldrich.com/MiBi-CRM)

# Sample Analysis

## Pathogen detection

### Traditional methods

We provide a broad selection of high-quality culture media to detect pathogenic bacteria in your sample. From dehydrated culture media to ready-to-use media, we have the solution matching your needs.

### ReadyBag® Ready-to-Use Media

Our pre-weighed and gamma-irradiated Readybag® granulated media pouches speed up and simplify your food pathogen testing routines. With our single-use Readybag® Buffered Peptone Water and Half FRASER broth pouches, there is no weighing and no autoclaving. Readybag® Half FRASER Broth even eliminates the need to prepare and sterile filter the supplements because they are already incorporated into the medium, saving you even more time and expense.



[SigmaAldrich.com/DCM](https://www.sigmaaldrich.com/DCM)

### Rapid methods

Rapid methods, if not described in specific USDA, FDA, ISO, or any other standard are considered as alternative methods that are preferred if faster time to result is needed to release food samples, especially meat but also other food with short shelf life, for human consumption. Alternative methods are applicable if validated according to ISO 16140 and/or AOAC International guidelines. The acceptance of which approval can be dependent on geographical regions.

### PCR Detection

The Assurance® GDS system combines the latest advancements in molecular detection technology and food microbiology to provide faster results with the increased accuracy required to meet today's food and environmental testing challenges.

The Assurance® GDS test utilizes multiple layers of specificity, including immunomagnetic separation (IMS), highly specific primers, and a patented probe system to ensure highly accurate results. Designed for optimum flexibility, various portions of the sample preparation can now be automated with the PickPen™ PIPETMAX® allowing industrial and plant laboratories to customize their testing to better fit their changing needs.



[SigmaAldrich.com/GDS](https://www.sigmaaldrich.com/GDS)

Assurance® GDS assays have been validated by international standards (AOAC / MicroVal / Health Canada / AFNOR) and are available for the detection of *Salmonella*, *Listeria* spp., *Listeria monocytogenes*, *E. coli* O157:H7, EHEC, Shiga Toxin Genes, Top STEC, and *Cronobacter*.

### Enzyme-linked Immunosorbent Assay (ELISA) method

Our TRANSIA® AG technology for EHEC incorporates proven antibody-antigen "sandwich" assay for the detection of *E. coli* O157, including strain H7, in beef samples.

How it works: microtiter plate wells coated with highly specific antibodies capture and bind the target antigen if present. A detection antibody linked to a conjugate enzyme is then introduced to form an antibody/antigen/antibody sandwich and finally, a substrate is added and converted by the conjugate enzyme to produce a color change indicating the presence of the target pathogen. A combination of the extensive AOAC OMA validation along with built-in positive controls ensures confidence in results.

[SigmaAldrich.com/Transia](https://www.sigmaaldrich.com/Transia)

## Lateral Flow Tests

Lateral Flow Tests are immunoassays for detecting food pathogens with the ultimate convenience.

[SigmaAldrich.com/Lateral-Flow](https://www.sigmaaldrich.com/Lateral-Flow)

### Singlepath® & Duopath® Lateral Flow Tests

Covering the major pathogens, the tests act as mini-laboratories and include a built-in control reaction for optimized pathogen testing. Definitive results are delivered in as little as 20 minutes. Use in combination with our GranuCult® dehydrated media to ensure optimal test performance.

Benefits:

- **Reliable:** same accuracy standards as classical detection methods
- **Comprehensive:** cover the most relevant pathogens in food – *Campylobacter*, *E. coli* 0157, STEC, *Salmonella* (all AOAC-RI approved), *Listeria monocytogenes* and *Bacillus cereus* Enterotoxins.
- **Fast:** Definitive results within 20-30 minutes
- **Easy-to-use:** Clear yes/no results after simple sample application
- **Safe:** Additional positive control and specially adapted enrichment media for reliable results



### VIP® Gold Lateral Flow Tests

VIP® Gold (Visual Immuno Precipitate) is a lateral flow immunoassay for the detection of pathogens in food and environmental surfaces. Each VIP® Gold device is a self-contained test that requires only the addition of sample, making it an extremely simple and user-friendly method ideal for low to medium volume labs. VIP® Gold tests are AOAC and Health Canada approved and available for testing:

- *Salmonella*
- EHEC
- *Listeria* spp.

## Microbiological Identification and Confirmation

### ID Membranes for Rapid Identification or Confirmation

Agar plates are often used for the detection or enumeration of microorganisms. Our smart, inexpensive and simple ID membranes can help to identify or confirm organisms within 1 to 4 hours, directly from your plates. After routine inoculation and isolation, these membranes enable the direct identification based on chromogenic and fluorogenic substrates. Simply place the membrane on the colonies grown on the plate, then after a short incubation time, the colors or fluorescence develop in the presence of specific microorganisms.

We offer a broad range of different ID membranes to identify diverse organisms from water, food, environmental and clinical samples.

[SigmaAldrich.com/IDMembranes](https://www.sigmaaldrich.com/IDMembranes)

## Indicator organism testing

Contamination prevention is the key to keeping our food supply safe. It is therefore necessary to continuously monitor food production facilities and final products for indicator organisms. These organisms indicate potential hazards in the finished products, which can lead to costly product recall.

### Traditional Methods

There are different ways to test for quality indicators and / or index organisms, including traditional methods using our gold standard GranuCult® dehydrated media, or our ready-to-use solutions, for example ReadyPlate™ agar plates or ReadyTube® liquid media.

#### ReadyPlate™ Agar Plates

For isolation and enumeration of indicator organisms, our ReadyPlate™ prepared agar plates are certified to be fully compliant with EN ISO 11133:2014, as well as with individual standards, and are quality controlled by ISO/IEC 17025:2005 accredited laboratories. Each plate is provided with a label including a data matrix code for paperless plate identification.

Our range includes:

- ReadyPlate™ (90 mm plates) e.g. XLD agar, MYP, BPA, PEMBA etc.
- ReadyPlate™ CHROM (90 mm plates) Chromogenic media e.g. CCA, TBX and Listeria Agar



#### Ready-to-use Liquid Media: ReadyTube® Media

Discover ready-to-use media in tubes and bottles for isolation, enumeration or enrichment of microorganisms in food. Our ReadyTube® bottles and tubes are fully compliant with EN ISO 11133:2014 and as well as with individual standards, and are quality controlled by ISO/IEC 17025:2005 accredited laboratories to ensure compliance.

Our clear naming convention where the number indicates the volume in mL of media contained in each bottle or tube (e.g. ReadyTube® 200 media where each bottle in the pack contains 200 mL of media) makes it simple.

- Easy visibility of compliance on product label and certificate of analysis
- Safe testing with maximum convenience
- No time-consuming preparation
- High reproducibility with a low error rate
- Long shelf life of 6-12 months
- Released through ISO 17025 accredited QC lab for reduced incoming quality control tests

[SigmaAldrich.com/RTU-Media](https://www.sigmaaldrich.com/RTU-Media)

## Alternative methods

Our range of rapid culture media plates are an efficient method for the detection and enumeration of microorganisms including quality indicators, pathogens and spoilage organisms. They are also suitable for testing of difficult matrices.

[SigmaAldrich.com/Alternative-Media](https://www.sigmaaldrich.com/Alternative-Media)

### MC-Media Pad®

Use fewer handling steps for your indicator organism testing, with our MC-Media Pad® ready to use method. This convenient method complies with international food and beverage standards (AOAC-PTM & MicroVal, ISO 16140), and it can be used for convenient microbiological testing of coliforms and *E. coli*, yeast and mold, or aerobic microbial contamination. The clear color coding means that you will always pick the right one at a glance. The MC-Media Pad® improves your workflow and reduces required storage, incubation and waste capacity. Simply inoculate your sample, incubate, and count your results!



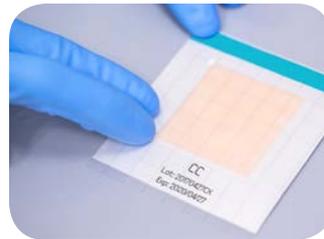
### Accurate results in four steps



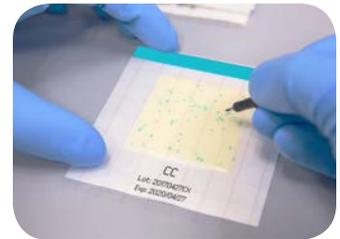
1.  
Open the cover film  
diagonally



2.  
Inoculate your  
sample, it will diffuse  
automatically



3.  
Close the cover film  
and incubate



4.  
Count your results

### SimPlate® Tests

When working with complex matrices, our SimPlate® device can help make testing simple. This ISO and AOAC validated assays provides rapid, easy to interpret results even with food matrices that are challenging for other rapid methods. The SimPlate® system with Binary Detection Technology™ represents the latest technological advancement in counting techniques for the food industry. Results are presented as a clear visual positive or negative readout without the need for subjective interpretation, which provides consistency across users, generating more reproducible results.



## Hygiene Monitoring

Effective cleaning and disinfection, the foundations for good hygiene, have been a product focus and passion of ours for many years. Whether it is the environment, the equipment, the surfaces, air, water or wastewater, we have the solutions.

Our hygiene monitoring range has been developed and optimized in close cooperation with industrial users and operators, as well as with opinion leaders of supervising authorities.

### Active and Passive Air Monitoring

Hygiene standards in a production environment are directly linked to the microbiological safety of the finished products. We therefore make sure that our active microbial air sampling solutions generate highly precise, reliable and reproducible results. We offer a comprehensive range of active and passive microbial air monitoring solutions for effective use in the food and beverage industry where regulations are on the rise, and standards become increasingly stringent.

Our air samplers are based on different principles, enabling selection of the technology to suit your needs. Our range includes MAS-100® air samplers which are based on the Anderson impaction principle that use settle plates or contact plates, as well as RCS® (Reuter Centrifugal Sampler) that use dedicated agar strips. There are product variants specifically designed for economical use in the food and beverage industries, for explosion hazard areas and for monitoring of compressed gases.

#### MAS-100® ECO Air Sampler

The MAS-100® ECO microbial air sampling system is designed for reliable and easy microbial monitoring of ambient air in food and beverage manufacturing facilities.

- Accurate, reproducible measurements and outstanding user flexibility
- Easy yes/no button operation
- Built-in airflow compensation and fully automatic calibration
- Robust and designed to operate in food manufacturing environments



#### Passive Air Monitoring: LI (Long Incubation) Settle Plates

LI Settle Plates are single-bagged prepared media ideal for use as settling plates. These plates contain either Tryptic Soy agar (TSA) general purpose media, or Sabouraud Dextrose agar (SDA), which is ideally suited for the growth of yeast and molds.

- Higher than standard filling volume of 30 mL to compensate for water loss
- Barcoded to enable full traceability

[SigmaAldrich.com/Microbial-Air-Monitoring](https://www.sigmaaldrich.com/Microbial-Air-Monitoring)

### Traditional Surface and Liquid Monitoring

We provide a wide range of solutions for surface, personnel and liquid testing, which are critical to ensure that your production plants are clean, and the contamination risk of products and processes is minimized. For monitoring the efficiency of disinfection routines, proven methods and easy-to-use testing solutions are available for standard flat and curved surfaces as well as difficult to access areas. We offer a wide range of traditional agar media solutions such as ready-to-use contact plates, contact slides as well as swabs, each being suited to different surface types.

[SigmaAldrich.com/Surface-Monitoring](https://www.sigmaaldrich.com/Surface-Monitoring)



### Contact Slides, Dip & Swabs

Our Dip and Swab testers are designed for convenient microbial counting in a broad range of applications. Using the swab, you can reach even difficult to access areas. These ready-to-use dehydrated dip testers are available for heterotrophic plate count (HPC), yeast & mold, and coliforms. They are convenient and easy to use, suitable for liquid and swab samples.

### Rapid Surface Monitoring

We offer a range of solutions for rapid environmental monitoring disinfection control and HACCP management including convenient media, ATP testing and allergen and protein detection.

[SigmaAldrich.com/Rapid-Surface-Monitoring](https://SigmaAldrich.com/Rapid-Surface-Monitoring)

### MVP ICON® Hygiene Monitoring and HACCP Management System

The MVP ICON® instrument and software platform combines HACCP and hygiene monitoring with powerful program management capabilities. The MVP ICON® system allows you to monitor key HACCP parameters, reducing the need for multiple instruments. Available measurements include:

- ATP (Adenosine Triphosphate)
- Chemical Concentration (ppm)
- Conductivity ( $\mu\text{S}$ )
- pH
- Temperature

Rapid results allow for real-time decision making and corrective action. The patented design of the sampling device ensures a high degree of accuracy—even in the presence of sanitizers. The MVP ICON® instrument provides the most complete HACCP and hygiene monitoring system with dashboard software that displays key performance metrics, so you can effectively manage your quality assurance program.

And with the use of an optional, externally connected measurement probe, additional quality and HACCP parameters like pH can be measured and monitored. Within the beef industry, testing the pH level of beef samples is a common industry practice that helps determine the overall quality and suitability of meat product. High pH results in darker meat (purple in appearance rather than bright red colour), loss of moisture during cooking (resulting from high water retention), and reduced shelf life because bacteria grow more rapidly. The MVP ICON® pH probe contains no glass, so is safe for use on the plant floor.



### FLASH® Rapid Allergen Indicator Protein Detection Test

Protein swab tests are used to help quickly verify cleaning effectiveness by detecting protein residues, including allergens left on food contact surfaces after cleaning. The FLASH® total protein test gives a visual readout with results within 10 minutes, allowing corrective action to be taken immediately. No instrumentation is required, and the test can be used by all personnel without the need for extensive training.

- Single swab providing flexible test method based on desired level of sensitivity:
  - Room temperature readings detect down to 20  $\mu\text{g}$
  - Achieve higher sensitivity detection down to 3  $\mu\text{g}$  when incubated at 70 °C
- Detects total protein, including samples comprising the “Big 8” food allergens: gluten flour, soy flour, egg powder, milk powder, roasted almonds, peanut butter, raw shrimp, and raw fish (cod)

# Microbiology Services

## Are you ready to start testing?

We provide an extensive service offering\* for our customers in the food industry:

- On-site product installation
- Instrument qualification protocols
- Operator qualification training & annual re-certification training
- Instrument service and preventative maintenance plans (Total Coverage, Total Service, Verification Service)

\*Individual service offerings may vary per product & geography, so ask your local representative for details

[SigmaAldrich.com/Food-Services](https://SigmaAldrich.com/Food-Services)

## what if **safety** were an open book?

Let's create regulatory compliance. Together.

In the food industry, where consumer safety is a major concern, stringent standards regulate the production environments. The quality control of food products and their ingredients is regulated by international standards. Countries that don't follow ISO, FDA, or USDA methods may have developed their own methods that are different, making it challenging to stay updated.

Visit our website to find regulatory resources that help you to stay compliant. We offer articles, whitepapers and webinars about international regulatory standards for free.

[SigmaAldrich.com/Food-Regulatory](https://SigmaAldrich.com/Food-Regulatory)



To find out more, visit  
[SigmaAldrich.com/Food-Methods](https://SigmaAldrich.com/Food-Methods)

# Regulatory Compliance

## USDA FSIS MLG and Health Canada MFLP

In the United States, microbiological testing parameters for beef are outlined in the USDA FSIS *Microbiology Laboratory Guidebook* (MLG). These methods are used by FSIS Field Service Laboratories to support FSIS regulatory activities. In the MLG, you can locate various methods for sample preparation, enrichment, isolation, and identification of pathogenic organisms as well as media and reagent formulations and flow charts. Key pathogen methods are outlined for *Salmonella* (MLG Chapter 4.10), STECs (MLG 5C.00), *Listeria monocytogenes* (MLG 8.11), *Bacillus cereus* (MLG 12), and *Clostridium perfringens* (MLG 13).

Similarly, in Canada, microbiological testing parameters for beef are outlined in the Health Canada *Official Methods for the Microbiological Analysis of Foods*. Key pathogen methods are outlined for *Salmonella* (MFHPB-20), STECs (*E. coli* O157:H7 MFHPB-10, non-O157 MFLP-52), *Listeria monocytogenes* (MFHPB-30), *Bacillus cereus* (MFLP-42), and *Clostridium perfringens* (MFHPB-23). Complying with regulations is key to ensuring your products reach the intended market. Our test platforms offer you many different options to fit your needs, so your high-quality products are in consumers hands fast and safe.

Our beef testing products are AOAC-PTM, AOAC-OMA, and Health Canada approved.

Product	AOAC-PTM	AOAC-OMA	MicroVal, AFNOR acc. ISO 16140-2	Health Canada
Assurance® GDS molecular detection system	✓	✓	✓	✓
VIP® Gold lateral flow devices	✓	✓		✓
Singlepath® lateral flow devices	✓			
Duopath® lateral flow devices	✓			✓
TRANSIA® Plate ELISA system	✓	✓	✓	✓
SimPlate® Plates	✓	✓	✓	
MC-Media Pad® Y&M	✓	✓	✓	
MC-Media Pad® RAC	✓	✓	✓	
MC-Media Pad® SA	✓		✓	
MC-Media Pad® CC	✓			
MC-Media Pad® EC/CC	✓			

# Millipore®

Preparation, Separation,  
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400 Summit Drive  
Burlington, MA 01803

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Discover all our products and services at  
**SigmaAldrich.com/Beef**

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Or order online at: [SigmaAldrich.com/order](https://SigmaAldrich.com/order)

For Technical Service, please contact: [technicalservice@merckgroup.com](mailto:technicalservice@merckgroup.com)

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09/2019