

# Microbiology Standards

The Simple Way to Ensure Accurate Results, Every Time

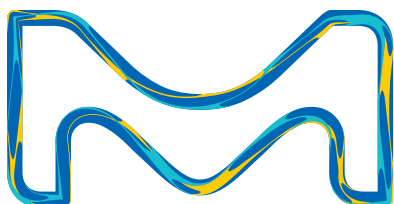
## Vitroids™ and LENTICULE® discs

Defined CFU range and low standard deviation

Fast, reliable and easy to use



Produced in double accredited laboratory fulfilling  
**ISO/IEC 17025** and  
**ISO 17034**



The Life Science business  
of Merck operates as  
MilliporeSigma in the  
U.S. and Canada.

## Millipore®

Preparation, Separation,  
Filtration & Monitoring Products

# The Simple Way to Ensure Accurate Results, Every Time

## Certified Reference Microorganisms

### Why use CRMs in Microbiology?

In pharmaceutical, food, water, and environmental microbiology, laboratory results are an important part of a wider process that helps to confirm that samples are of an acceptable microbiological quality, are safe and comply with relevant legislation or guidelines. Quality control is an essential element of a laboratory's quality assurance system and characterized authenticated reference materials are necessary for effective quality control.

The same is true of microbiological testing; the one factor that is repeatedly overlooked is careful sourcing of biological resources such as the quality control strains. Incorrect quality control materials may indicate that test results are acceptable when, in fact, there is a problem with the samples being tested. Alternatively, control results may indicate that a test is not performing correctly, instigating unnecessary investigations and repeat testing.

Ready-to-use microbiological controls minimize the need for maintaining control strains in the test laboratory and guarantee that an authenticated control culture is used for every quality control test. Such control materials must be fit-for-purpose, bearing in mind that for pharmaceutical, food, water, and environmental samples, the ability to accurately and reliably enumerate microorganisms—often at relatively low numbers—is essential. It is also important that

controls can be applied to the wide range of different matrices that are often tested in a single laboratory.

The application of a unique preservation technology involving controlled-drying of authenticated cultures of internationally accepted microbiology control strains has resulted in the production of single-use discs containing microorganisms, designed for use in pharmaceutical, food, water and environmental testing laboratories. These quality control materials, LENTICULE® discs (developed by UK Health Security Agency, UKHSA) and Vitroids™ (developed by us), are now manufactured by our company under conditions compliant with ISO 17034.<sup>1</sup> The discs contain pure cultures of bacteria, yeasts, or molds in a solid water-soluble matrix. Comprehensive certificates of analysis provide details about the mean number of colony forming units (CFU) per disc, the method used to determine the product data, and the number of subcultures from the original strains provided under licence by NCTC® and CECT®.

Single-use controls manufactured directly from cultures provided by recognized Biological Resource Centres (BRCs) such as NCTC® for LENTICULE discs and CECT® for Vitroids, mean that laboratories can be confident about the authenticity of their strains and the suitability of their quality control materials; factors that are of increasing importance as laboratories become more automated and new technologies emerge and are rapidly adopted in routine microbiology settings.

### What are Vitroids™ and LENTICULE® discs?

Vitroids™ and LENTICULE® discs contain viable microorganisms in a certified quantity (generally accredited according ISO/IEC 17025,<sup>9</sup> General requirements for the competence of testing and calibration laboratories), produced under reproducible conditions compliant with ISO 17034:2016 using authenticated strains from NCTC®, NCPF® and CECT®. Consisting of pure cultures of bacteria, fungi, or yeasts in a solid water soluble matrix, they are stable for at least 16 months and are in a viable state with a shelf life of 16-24 months. The within-batch variation for every product is very low. Each batch is provided with a comprehensive certificate of analysis that specifies the mean number of colony forming units (CFU), an expanded uncertainty about the mean, details about the method used to determine the product data and the number of passages (subcultures) from the original strain (maximum 3 passages from original strain).

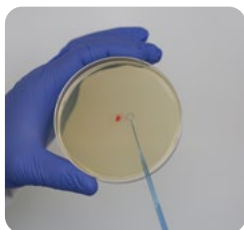


## Applications

- Daily quality control
- Performance testing of media acc. ISO 11133<sup>2</sup>
- Validation of new methods (e.g. acc. ISO 16140 series<sup>3,4,5,6,7,8</sup>)
- Materials for proficiency testing or ring trials
- Method development
- Staff training
- Starter cultures

## Stability

Certified Reference Microorganisms in this unique format are very stable and in most cases will remain so for many years at -20 °C. The numbers of CFUs do not change, the organisms need no recovery time and have no lag phase. Even a short period at ambient temperature, such as during shipment, is not an issue for product stability.



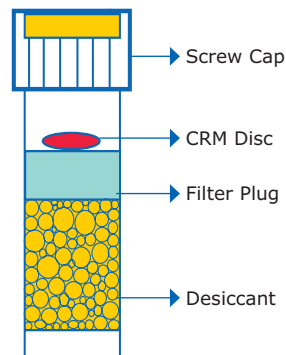
## Improved Stability, Performance, and Ease of Use

Utilization of new technology has allowed us to make major improvements in the field of Microbiological Reference Materials. The main areas of development are stability, temperature resistance, adjusting the narrow defined CFU range, rehydration time, and better within batch reproducibility. In addition, each disc is certified according to ISO 17034<sup>1</sup> and ISO/IEC 17025.<sup>9</sup>



## Preparation

Most solid and liquid media or rehydration buffers can be used. Discs can be rehydrated in as little as 100 µL buffer, or in larger volumes, e.g. 100 mL medium. It is also possible to add the disc to a cooled molten medium used for pour plate techniques. The rehydration process takes approximately 10 minutes. On solid media, the disc forms a droplet that can be spread with a sterile loop. In liquid media, the disc dissolves very quickly.



**Vitroids™ and LENTICULES® disc packaging**

## Packaging

The discs are packed individually in vials. The vials have a special screw-cap with seal and contain a desiccant at the bottom. The vials are packed in a mylar bag with a zip.

## Strains

LENTICULE® discs are prepared from a traceable culture obtained freeze-dried from the National Collection of Type Cultures (NCTC®) or National Collection of Pathogenic Fungi (NCPF®) and are manufactured under license and control from UKHSA.

Vitroids™ are derived from a traceable culture obtained freeze-dried from CECT and produced according to our patented technology. Both NCTC® and CECT® strains are conveniently matched to WDCM numbers and have CFU ranges that closely align with ISO 11133<sup>2</sup> (Preparation, production, storage, and performance testing of culture media).

## References

1. General requirements for the competence of reference material producers (ISO 17034:2016)
2. Microbiology of food, animal feed and water - Preparation, production, storage and performance testing of culture media (ISO 11133:2014, Corrected version 2014-11-01 + Amd. 1:2018 + Amd. 2:2020)
3. Microbiology of the food chain, Method validation Part 1: Vocabulary ISO 16140-1:2016
4. Microbiology of the food chain, Method validation Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method (ISO 16140-2:2016)
5. Microbiology of the food chain, Method validation Part 3: Protocol for the verification of reference methods and validated alternative methods in a single laboratory (ISO 16140-3:2021)
6. Microbiology of the food chain, Method validation Part 4: Protocol for method validation in a single laboratory (ISO 16140-4:2020)
7. Microbiology of the food chain, Method validation Part 5: Protocol for factorial interlaboratory validation for non-proprietary methods (ISO 16140-5:2020)
8. Microbiology of the food chain, Method validation Part 6: Protocol for the validation of alternative (proprietary) methods for microbiological confirmation and typing procedures (ISO 16140-6:2019)
9. General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2017)

# Test strains used for performance testing

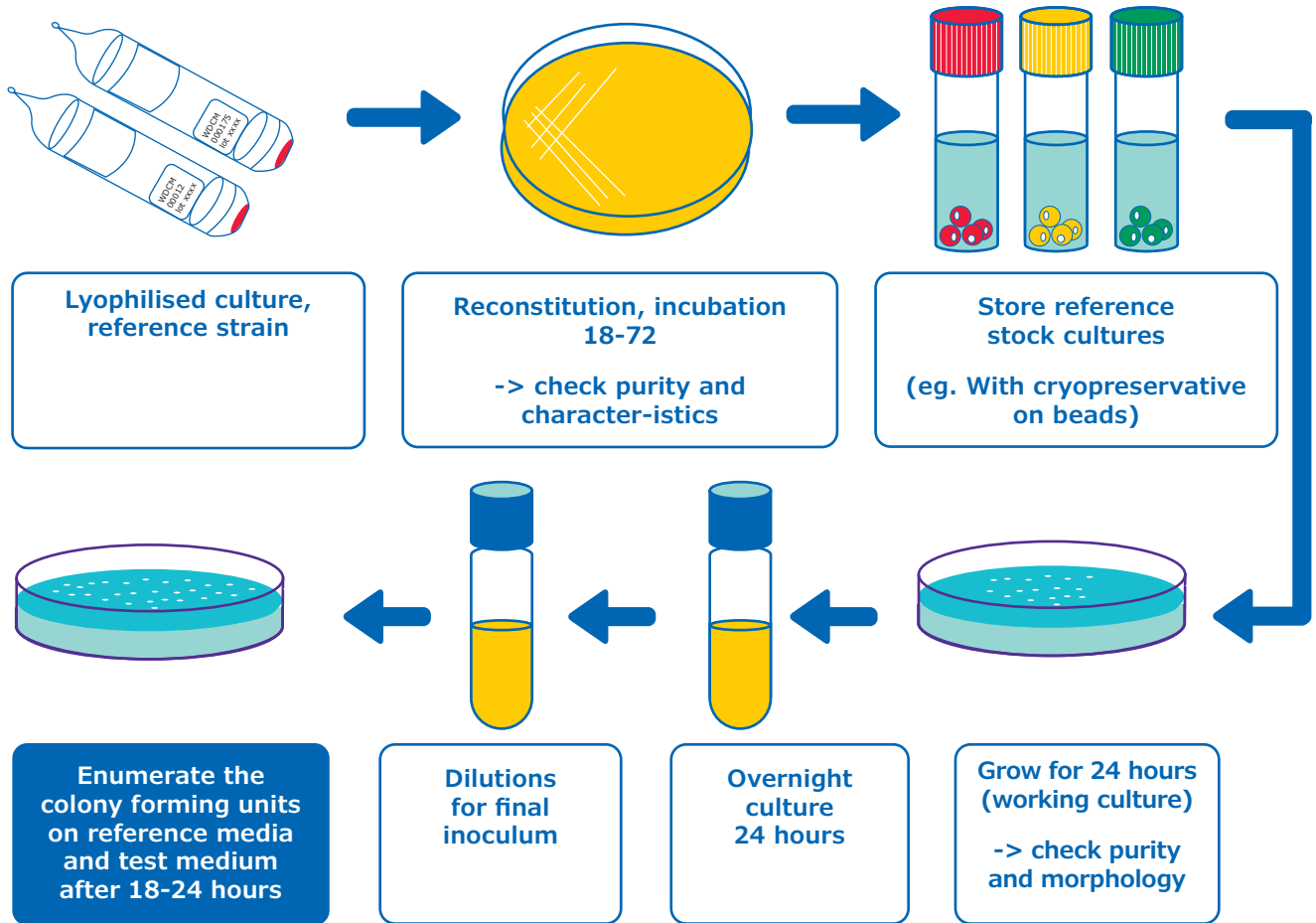
## Traditional Way

### Costs:

- Lyophilized cultures
- Reagents
- Consumables
- Energy

### Time needs:

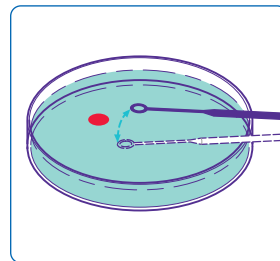
- Hands on time
- Documentation
- incubation



## New Way

### Using Vitroids™ and LENTICULE® discs:

- More accuracy
- Save time & costs
- Easy handling
- No stock culture maintenance
- Less documentation



Tap and tip onto culture plate or into buffer or liquid media. Wait 10 minutes! Streak out, pour it or filter it



Enumerate the colony forming units after 18-24 hours

## Save Time and Costs

Using Vitroids™ and LENTICULE® discs is time saving because it removes the need for preparing stock cultures. The organisms do not require recovery time or pre-enrichment step. In addition the product concentrations are designed in a range where no or only minimal dilutions are needed. The discs readily dissolve in liquid media and on agar plates resulting in easy handling and a very economical solution.



### Time Savings

| Traditional Methods                               | Hands on time   |
|---------------------------------------------------|-----------------|
| Choose and purchase test organisms                | 5.0 min         |
| Resuscitation and purity check                    | 22.8 min        |
| Preparation of reference stocks                   | 4.4 min         |
| Preparation of stock cultures                     | 10.0 min        |
| Preparation of working cultures                   | 0.7 min         |
| Preparation of over-night culture                 | 0.7 min         |
| Preparation of suspensions (inocula) for the test | 7.6 min         |
| Testing of inoculum, serial dilutions             | 13.8 min        |
| Quantitative/Qualitative Testing                  | ✓               |
| <b>Hands on time</b>                              | <b>65.0 min</b> |

| Certified reference material with required final inoculum                                  | Hands on time  |
|--------------------------------------------------------------------------------------------|----------------|
| Choose and purchase test organisms                                                         | 5.0 min        |
| Remove the tubes from the freezer                                                          | 0.7 min        |
| Allow the discs to reach ambient temperature (15 min)                                      | 0.0 min        |
| Open the tube and remove the discs by inverting the tube over the medium/buffer to be used | 0.7 min        |
| Leave at room temperature to rehydrate (15 min)                                            | 0.0 min        |
| Quantitative/Qualitative Testing                                                           |                |
| <b>Hands on time</b>                                                                       | <b>6.4 min</b> |

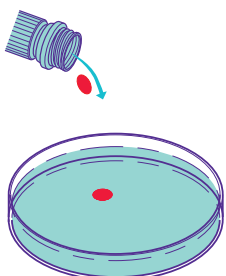


## Examples for Inoculation

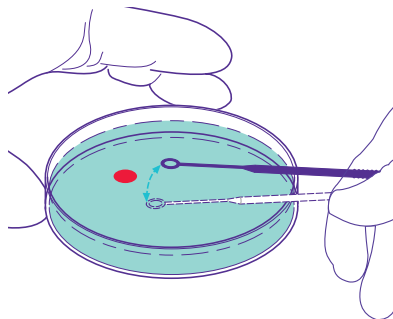
Vitroids™ and LENTICULE® discs are as available as small water-soluble discs, making your inoculum preparation exceptionally easy.

### The discs can be used to directly inoculate solid media by following these steps:

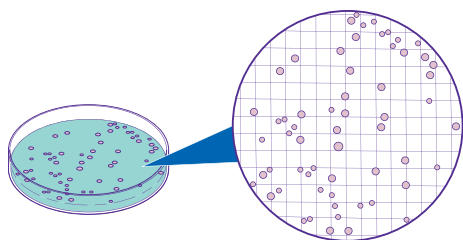
1. Take the tube(s) containing the disc(s) from the freezer and allow it to reach ambient temperature (5 to 10 minutes) before use. Do not refreeze. Use the disc(s) within one hour of transferring to ambient temperature.
2. Open the tube and remove the discs by inverting the tube over the solid medium.



3. Leave the discs on the surface of the medium at room temperature to rehydrate. After 10 to 15 minutes ensure that the disc is completely dissolved.



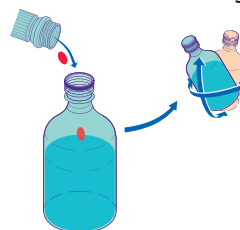
4. Spread the drop over the entire plate.
5. Test and incubate the sample following routine enumeration procedures.



### The discs can be rehydrated in buffer / liquid media before use :

If the disc has a higher concentration or is used to inoculate liquid media, the Vitroids™ and LENTICULE® discs can be rehydrated in liquid medium or buffer, respectively. Do not rehydrate the discs directly in distilled water.

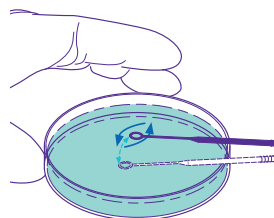
1. Remove the tube(s) from the freezer and allow the disc(s) to reach ambient temperature (5 to 10 minutes) before use. Do not refreeze. Use the disc(s) within one hour after transferring to ambient temperature.
2. Open the tube and remove the discs by inverting the tube over the buffer or medium to be used. Shake gently and leave inoculated buffer/media at room temperature for 10 to 15 minutes. Shake gently again.



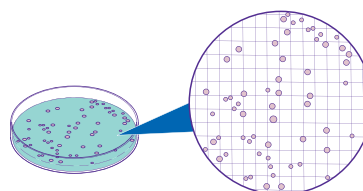
3. Apply the inoculum onto an agar plate.



4. Spread the drop over the entire plate



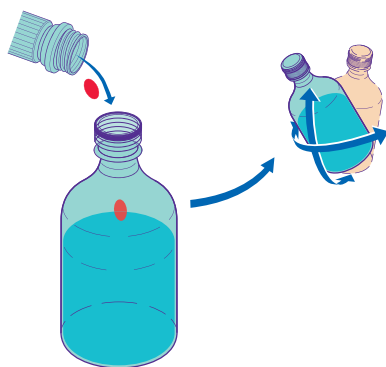
5. Test and incubate the sample following routine enumeration procedures.



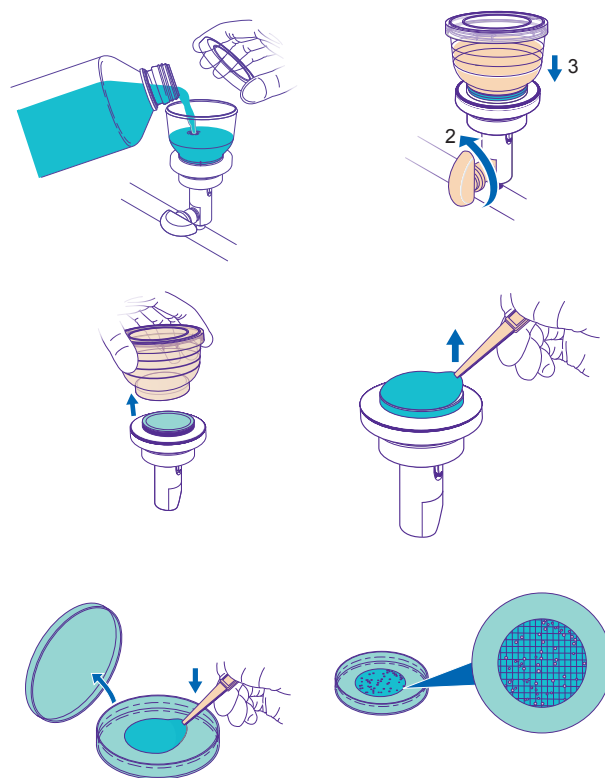
### Procedure to use the discs for membrane filtration:

If the discs are used for membrane filtration, the Vitroids™ and LENTICULE® discs can be rehydrated in sterilized tap water or buffer or dilution solvent, respectively. Do not rehydrate the discs directly in distilled water.

1. Remove the tube(s) from the freezer and allow the disc(s) to reach ambient temperature (5 to 10 minutes) before use. Do not refreeze. Use the disc(s) within one hour after transferring to ambient temperature.
2. Open the tube and remove the discs by inverting the tube over the buffer or medium to be used. Shake gently and leave inoculated buffer/media at room temperature for 10 to 15 minutes. Shake gently again.



3. Test and incubate the sample following routine enumeration procedures.



# Certificate of Analysis (CoA)

Our Certified Reference Microorganisms come with a Certificate of Analysis (CoA) as well as certain data to characterize the reference strain, its cfu count uncertainty, and traceability information.

**Characterization:** For characterization, the homogeneity and stability assessment, separately performed for each CRM, is given on the certificate, along with the geometric mean value of the cfu count including the method used to perform the test. These are the metrological measurement data of the CRM. The identification method is also stated, based on classical microbiological or biochemical tests and MALDI-TOF-MS analysis.

**Uncertainty:** Standard deviation of the cfu number is determined and, from this, an expanded uncertainty and an expected range ( $\pm 2SD$ ) calculated. The calculation is explained in detail on the CoA. At least 95% of the CFU values of the discs are guaranteed to lie within the expected range. These values take into

account all possible errors from production up to the analysis of the CRMs.

**Traceability:** Each CRM needs to be traceable, in our case back to a batch of a specific reference strain from NCTC®, NCPF® or CECT®, our national culture collection partners. The number of passages, the traceability of identification and the metrological measurement data are documented in the certificate.

**Instructions:** The CoA also states the intended uses and gives details about the possible reconstitution and inoculation methods.

The certificate has a specific accreditation stamp from the Swiss Accreditation Service SAS, designating our company as a reference material producer under no. SRMS 0001 in accordance with international standard ISO 17034. At its end, each certificate is signed by the responsible production manager and the responsible QC approver.



## Certified reference material – Vitroids™ Reference material certificate

### *Clostridium sporogenes* WDCM 00008 VT000082

**Product no.:** VT000082  
**Lot no.:** BCCK2303  
**Description of CRM:** Vitroids™ are disc-shaped, microbiological reference materials. Each disc contains a quantified number of microorganisms (colony forming units; cfu), immobilized in a solid water soluble matrix.  
**Expiry date:** MAR 2025  
**Storage:** -20 ± 5 °C; store the mylar bag containing the plastic vials with the Vitroids™ unopened  
**Starting material:** CECT 485 batch 04-09-2014 (freeze-dried microorganism in a glass ampoule)  
**No. of passages:** 2 (upon receipt from cell culture collection CECT)

| Sample: <i>Clostridium sporogenes</i> WDCM 00008 VT000082                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                   |                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------|
| Certified value<br>(geometric mean value)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Expanded uncertainty<br>(log <sub>10</sub> value) | Expected range                 |
| 2.7E+01 cfu per disc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.033                                             | 1.3E+01 - 5.6E+01 cfu per disc |
| Conditions:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Tryptcase soy agar / anaerobic / 37 °C / 48 hrs   |                                |
| Date of testing:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 27 MAR 2023                                       |                                |
| <p><b>cfu:</b> colony forming units</p> <p>The reference values are calculated by (US EPA Environmental Systems Monitoring Laboratory in Cincinnati) EMSL-CIN's computer program "BIWEIGHT". The measurement of uncertainty originates from the generated biweight standard deviation (SD) resulting from the biweight geometric mean value obtained during homogeneity testing. The expected range takes into account media batch to batch variability, which is done by multiplying the biweight standard deviation by 1.6.</p> |                                                   |                                |

**Metrological traceability:** Details see "Certification process details" on page 2.

**Measurement method:** The certified value is established by plate counting in accordance with ISO/IEC 17025<sup>[1]</sup>.

**Intended, correct use & handling instructions:** Please follow the instructions given in "General instructions for intended uses of this reference material" on page 3.

**Health and safety information:** Please refer to the Safety Data Sheet (link on page 3) for detailed information about the nature of any hazard and appropriate precautions to be taken.

**Accreditation:** Sigma-Aldrich Production GmbH is accredited by the Swiss Accreditation Service SAS as reference material producer under no. SRMS 0001 in accordance with international standard ISO 17034 <sup>[2]</sup>.

**Certificate issue date:** 24 APR 2023



ISO 17034  
SRMS 0001



Dr. Thomas Bühner – CRM Operations



Dr. Philipp Zell – Approving Officer



# Commitment to Greener Alternative Products: Vitroids™ and LENTICULE® discs

Streamline your media testing workflow with our Vitroids™ and LENTICULE® discs, designed for accuracy and efficiency while reducing your environmental footprint.

## Why Choose Our Greener Solutions?

- **Reduced Environmental Impact:** Our centralized production process achieves an impressive 82% reduction in material usage and a 97% decrease in energy consumption compared to testing the performance of a medium with 5 self-produced control strains once a week over a period of 5 years. This ensures that your testing materials are both effective and more sustainable.
- **Ready-to-Use Convenience:** Our CRMs eliminate the need for extensive preparation and incubation steps, reducing the time required per test from 72 hours to 24 hours compared to lyophilized reference strains from culture collections. With our solutions, you can streamline your workflow while minimizing waste.
- **Sustainable Packaging:** All fiber-based packaging is 100% recycled and is certified for zero-deforestation. We believe that every step counts in our journey toward providing Greener Alternative Products.

By choosing Vitroids™ and LENTICULE® discs means prioritizing quality in microbiological testing while contributing to your lab's sustainable goals.

For more information on our Greener Alternative Products and sustainability commitment, visit us at <https://www.sigmaaldrich.com/DE/en/life-science/ssbi>

## Product Improvement Highlights



### Emissions & Energy

Reduction of energy consumption compared to the scenario where each customer incubates and tests their own strains.

**97%**  
reduction



### Materials

Reduction of materials through centralized manufacturing at Merck

**82%**  
reduction

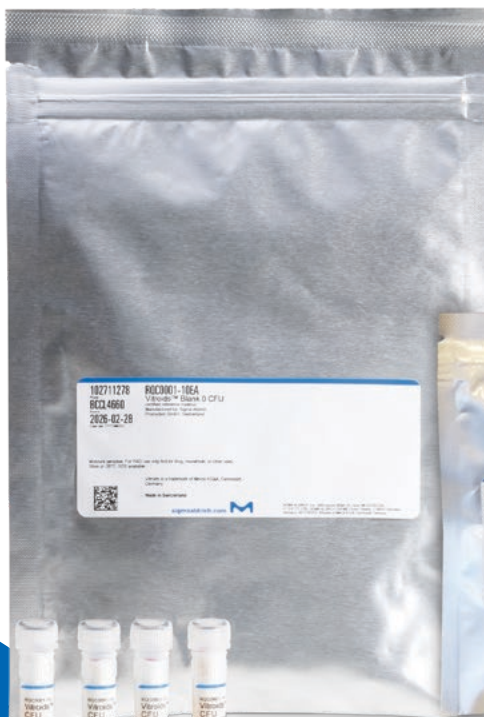


### Usability & Innovation

Reduction of time required per test due to elimination of preparation steps and incubation phases

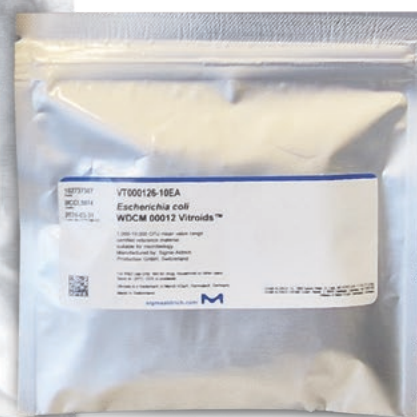
**24**  
instead  
of  
**72 hours**

Previous Packaging



**45%**  
packaging  
reduction

New Packaging



# A Strong Partnership

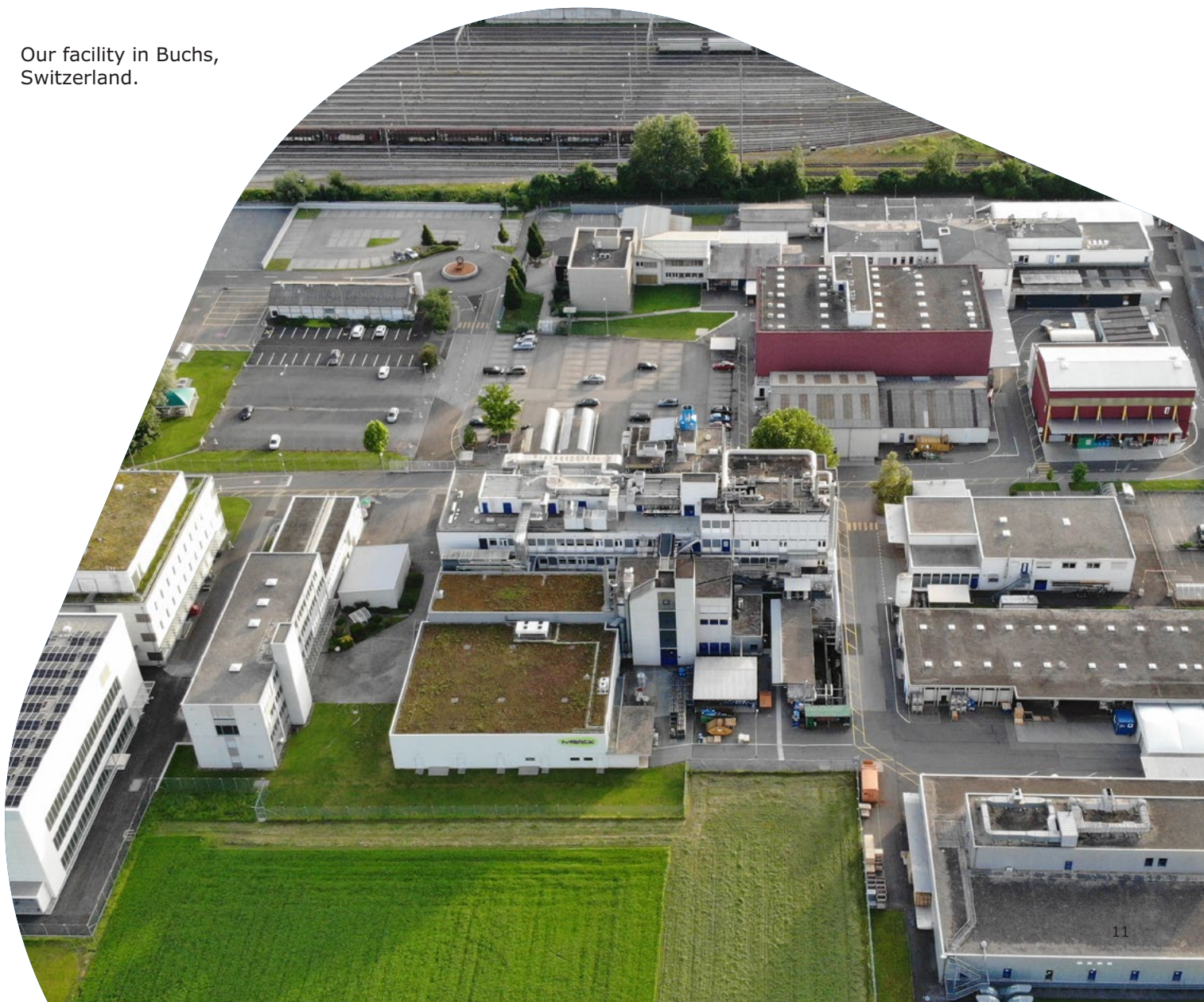
UKHSA's NCTC® is a national BRC that preserves, maintains and regularly updates a specific collection of bacterial strains, ensuring there are no changes to physical characteristics, such as morphology and nutritional requirements, the genome and the proteome. It is one of several BRCs that provide authenticated biological reference and control strains. In addition, the UKHSA also developed the LENTICULE® disc that enables a laboratory to have an on demand source of a control for quantitative microbiology.

With increased worldwide demand for the accreditation of testing labs, as well as the development of fast, automated methods in microbiology, the use of Microbial Certified Reference Materials has increased substantially. With this in mind, it is an appropriate

time to entrust the manufacture and distribution of these products to an ISO accredited manufacturing company such as ours, enabling the UKHSA organization to focus on research and development for new products to add to this portfolio. This R&D is further enhanced by an exciting project by UKHSA, in collaboration with the Wellcome Trust Sanger Institute, to provide whole genome sequences using long-read technology for 3000 bacteria of clinical importance.

An integral part of this partnership is our creation of a dedicated manufacturing facility in Buchs, Switzerland to provide the growth and development of Certified Reference Microorganisms, both for now and for the future. It will enable more scientists worldwide to easily access the NCTC®/NCPF® CRMs through our global supply chain.

Our facility in Buchs,  
Switzerland.





## Certified Reference Microorganisms Portfolio

| Cat. No.       | Coming soon | Species                                                                                     | L/V* | Origin | Strain No. | CFU Range      | CRM | WDCM  | Equivalent ATCC strain |
|----------------|-------------|---------------------------------------------------------------------------------------------|------|--------|------------|----------------|-----|-------|------------------------|
| VT000617-10EA  |             | <i>Aerococcus viridans</i>                                                                  | V    | CECT®  | 978        | 50,000-150,000 | x   | 00061 | 11563                  |
| VT070943-10EA  |             | <i>Alicyclobacillus acidoterrestris</i>                                                     | V    | CECT®  | 7094       | 80-130         | x   | -     | 49025                  |
| VT070946-10EA  |             | <i>Alicyclobacillus acidoterrestris</i>                                                     | V    | CECT®  | 7094       | 1,000-10,000   | x   | -     | 49025                  |
| VT000532-10EA  |             | <i>Aspergillus brasiliensis</i><br>(formerly <i>Aspergillus niger</i> )                     | V    | CECT®  | 2574       | 15-80          | x   | 00053 | 16404                  |
| VT001833-10EA  |             | <i>Aspergillus caesiellus (restrictus)</i>                                                  | V    | CECT®  | 20807      | 80-130         | x   | 00183 | 42693                  |
| CRM07464L-10EA |             | <i>Bacillus cereus</i>                                                                      | L    | NCTC®  | 7464       | 30-120         | x   | -     | 10876                  |
| CRM07464M-10EA |             | <i>Bacillus cereus</i>                                                                      | L    | NCTC®  | 7464       | 500-50,000     | x   | -     | 10876                  |
| VT000012-10EA  |             | <i>Bacillus cereus</i>                                                                      | V    | CECT®  | 193        | 15-80          | x   | 00001 | 11778                  |
| VT000013-10EA  |             | <i>Bacillus cereus</i>                                                                      | V    | CECT®  | 193        | 80-130         | x   | 00001 | 11778                  |
| VT000016-10EA  |             | <i>Bacillus cereus</i>                                                                      | V    | CECT®  | 193        | 1,000-10,000   | x   | 00001 | 11778                  |
| VT000032-10EA  |             | <i>Bacillus spizizenii</i><br>(formerly <i>Bacillus subtilis</i> subsp. <i>Spizizenii</i> ) | V    | CECT®  | 356        | 15-80          | x   | 00003 | 6633                   |
| VT000033-10EA  |             | <i>Bacillus spizizenii</i><br>(formerly <i>Bacillus subtilis</i> subsp. <i>Spizizenii</i> ) | V    | CECT®  | 356        | 80-130         | x   | 00003 | 6633                   |
| VT000036-10EA  |             | <i>Bacillus spizizenii</i><br>(formerly <i>Bacillus subtilis</i> subsp. <i>Spizizenii</i> ) | V    | CECT®  | 356        | 1,000-10,000   | x   | 00003 | 6633                   |
| VT000037-10EA  |             | <i>Bacillus spizizenii</i><br>(formerly <i>Bacillus subtilis</i> subsp. <i>Spizizenii</i> ) | V    | CECT®  | 356        | 50,000-150,000 | x   | 00003 | 6633                   |
| VT000716-10EA  |             | <i>Brochothrix thermosphacta</i>                                                            | V    | CECT®  | 847        | 1,000-10,000   | x   | 00071 | 11509                  |
| VT099522-10EA  |             | <i>Burkholderia cenocepacia</i>                                                             | V    | CECT®  | 9952       | 15-80          | x   | -     | BAA-245                |
| VT041372-10EA  |             | <i>Burkholderia cepacia</i>                                                                 | V    | CECT®  | 4137       | 15-80          | x   | -     | 25416                  |
| VT041376-10EA  |             | <i>Burkholderia cepacia</i>                                                                 | V    | CECT®  | 4137       | 1,000-10,000   | x   | -     | 25416                  |
| VT099542-10EA  |             | <i>Burkholderia multivorans</i>                                                             | V    | CECT®  | 9954       | 15-80          | x   | -     | BAA-247                |
| RMF03255L-10EA |             | <i>Candida albicans</i>                                                                     | L    | NCPF®  | 3255       | 30-120         | x   | 00055 | 2091                   |
| RMF03255H-10EA |             | <i>Candida albicans</i>                                                                     | L    | NCPF®  | 3255       | >100,000       | x   | 00055 | 2091                   |
| VT000542-10EA  |             | <i>Candida albicans</i>                                                                     | V    | CECT®  | 1394       | 15-80          | x   | 00054 | 10231                  |
| VT000543-10EA  |             | <i>Candida albicans</i>                                                                     | V    | CECT®  | 1394       | 80-130         | x   | 00054 | 10231                  |
| VT000546-10EA  |             | <i>Candida albicans</i>                                                                     | V    | CECT®  | 1394       | 1,000-10,000   | x   | 00054 | 10231                  |
| RM09750L-10EA  |             | <i>Citrobacter freundii</i>                                                                 | L    | NCTC®  | 9750       | 30-120         | x   | -     | 8090                   |
| VT004014-10EA  |             | <i>Citrobacter freundii</i>                                                                 | V    | CECT®  | 401        | 130-300        | x   | -     | 8090                   |
| VT004016-10EA  |             | <i>Citrobacter freundii</i>                                                                 | V    | CECT®  | 401        | 1,000-10,000   | x   | -     | 8090                   |
| VT000062-10EA  |             | <i>Citrobacter freundii</i>                                                                 | V    | CECT®  | 7467       | 15-80          | x   | 00006 | 43864                  |
| VT000063-10EA  |             | <i>Citrobacter freundii</i>                                                                 | V    | CECT®  | 7467       | 80-130         | x   | 00006 | 43864                  |
| VT000066-10EA  |             | <i>Citrobacter freundii</i>                                                                 | V    | CECT®  | 7467       | 1,000-10,000   | x   | 00006 | 43864                  |
| VT000067-10EA  |             | <i>Citrobacter freundii</i>                                                                 | V    | CECT®  | 7464       | 50,000-150,000 | x   | 00006 | 43864                  |
| CRM00506L-10EA |             | <i>Clostridium bifermentans</i>                                                             | L    | NCTC®  | 506        | 30-120         | x   | 00079 | -                      |
| CRM13170L-10EA |             | <i>Clostridium perfringens</i>                                                              | L    | NCTC®  | 13170      | 30-120         | x   | 00201 | -                      |
| CRM13170M-10EA |             | <i>Clostridium perfringens</i>                                                              | L    | NCTC®  | 13170      | 500-50,000     | x   | 00201 | -                      |
| VT000802-10EA  |             | <i>Clostridium perfringens</i>                                                              | V    | CECT   | 7468       | 15-80          | x   | 00080 | 12916                  |
| VT000803-10EA  |             | <i>Clostridium perfringens</i>                                                              | V    | CECT®  | 7468       | 80-130         | x   | 00080 | 12916                  |
| VT000082-10EA  |             | <i>Clostridium sporogenes</i>                                                               | V    | CECT®  | 485        | 15-80          | x   | 00008 | 19404                  |
| VT002132-10EA  |             | <i>Cronobacter muytjensii</i>                                                               | V    | CECT   | 9143       | 15-80          | x   | 00213 | 51329                  |
| VT002136-10EA  |             | <i>Cronobacter muytjensii</i>                                                               | V    | CECT   | 9143       | 1,000-10,000   | x   | 00213 | 51329                  |
| CRM11467L-10EA |             | <i>Cronobacter sakazakii</i>                                                                | L    | NCTC®  | 11467      | 30-120         | x   | 00214 | 29544                  |
| VT002142-10EA  |             | <i>Cronobacter sakazakii</i>                                                                | V    | CECT   | 858        | 15-80          | x   | 00214 | 29544                  |
| VT002146-10EA  |             | <i>Cronobacter sakazakii</i>                                                                | V    | CECT   | 858        | 1'000-10'000   | x   | 00214 | 29544                  |
| CRM10006L-10EA |             | <i>Enterobacter aerogenes</i>                                                               | L    | NCTC®  | 10006      | 30-120         | x   | 00175 | 13048                  |
| CRM10006M-10EA |             | <i>Enterobacter aerogenes</i>                                                               | L    | NCTC®  | 10006      | 500-50,000     | x   | 00175 | 13048                  |
| VT001752-10EA  |             | <i>Enterobacter aerogenes</i>                                                               | V    | CECT®  | 684        | 15-80          | x   | 00175 | 13048                  |
| VT001753-10EA  |             | <i>Enterobacter aerogenes</i>                                                               | V    | CECT®  | 684        | 80-130         | x   | 00175 | 13048                  |
| VT001754-10EA  |             | <i>Enterobacter aerogenes</i>                                                               | V    | CECT®  | 684        | 130-300        | x   | 00175 | 13048                  |

\* L/V = Vitroids™/LENTICULE® discs

| Cat. No.       | Coming soon | Species                                                               | L/V* | Origin | Strain No. | CFU Range      | CRM | WDCM  | Equivalent ATCC strain |
|----------------|-------------|-----------------------------------------------------------------------|------|--------|------------|----------------|-----|-------|------------------------|
| VT001756-10EA  |             | <i>Enterobacter aerogenes</i>                                         | V    | CECT®  | 684        | 1,000-10,000   | x   | 00175 | 13048                  |
| VT000834-10EA  |             | <i>Enterobacter cloacae</i>                                           | V    | CECT®  | 194        | 130-300        | x   | 00083 | 13047                  |
| VT000836-10EA  |             | <i>Enterobacter cloacae</i>                                           | V    | CECT®  | 194        | 1,000-10,000   | x   | 00083 | 13047                  |
| CRM00775L-10EA |             | <i>Enterococcus faecalis</i>                                          | L    | NCTC®  | 775        | 30-120         | x   | 00009 | 19433                  |
| CRM00775M-10EA |             | <i>Enterococcus faecalis</i>                                          | L    | NCTC®  | 775        | 500-50,000     | x   | 00009 | 19433                  |
| CRM00775H-10EA |             | <i>Enterococcus faecalis</i>                                          | L    | NCTC®  | 775        | >100,000       | x   | 00009 | 19433                  |
| VT000092-10EA  |             | <i>Enterococcus faecalis</i>                                          | V    | CECT®  | 481        | 15-80          | x   | 00009 | 19433                  |
| VT000093-10EA  |             | <i>Enterococcus faecalis</i>                                          | V    | CECT®  | 481        | 80-130         | x   | 00009 | 19433                  |
| VT000094-10EA  |             | <i>Enterococcus faecalis</i>                                          | V    | CECT®  | 481        | 130-300        | x   | 00009 | 19433                  |
| VT000096-10EA  |             | <i>Enterococcus faecalis</i>                                          | V    | CECT®  | 481        | 1,000-10,000   | x   | 00009 | 19433                  |
| VT000097-10EA  |             | <i>Enterococcus faecalis</i>                                          | V    | CECT®  | 775        | 50,000-150,000 | x   | 00009 | 19433                  |
| VT000877-10EA  |             | <i>Enterococcus faecalis</i>                                          | V    | CECT®  | 795        | 50,000-150,000 | x   | 00087 | 29212                  |
| VT000872-10EA  |             | <i>Enterococcus faecalis</i>                                          | V    | CECT®  | 12697      | 15-80          | x   | 00087 | 29212                  |
| VT000873-10EA  |             | <i>Enterococcus faecalis</i>                                          | V    | CECT®  | 12697      | 80-130         | x   | 00087 | 29212                  |
| VT000876-10EA  |             | <i>Enterococcus faecalis</i>                                          | V    | CECT®  | 12697      | 1,000-10,000   | x   | 00087 | 29212                  |
| VT000105-10EA  |             | <i>Enterococcus faecium</i>                                           | V    | CECT®  | 410        | 1,000-10,000   | x   | 00010 | 19434                  |
| VT001773-10EA  |             | <i>Enterococcus faecium</i>                                           | V    | CECT®  | 8108       | 80-130         | x   | 00177 | 6057                   |
| VT000907-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 515        | 50,000-150,000 | x   | 00090 | 11775                  |
| CRM09001L-10EA |             | <i>Escherichia coli</i>                                               | L    | NCTC®  | 9001       | 30-120         | x   | 00090 | 11775                  |
| CRM09001M-10EA |             | <i>Escherichia coli</i>                                               | L    | NCTC®  | 9001       | 500-50,000     | x   | 00090 | 11775                  |
| CRM09001H-10EA |             | <i>Escherichia coli</i>                                               | L    | NCTC®  | 9001       | >100,000       | x   | 00090 | 11775                  |
| VT000902-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 515        | 15-80          | x   | 00090 | 11775                  |
| VT000903-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 515        | 80-130         | x   | 00090 | 11775                  |
| VT000904-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 515        | 130-300        | x   | 00090 | 11775                  |
| VT000905-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 515        | 600-1400       | x   | 00090 | 11775                  |
| VT000906-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 515        | 1,000-10,000   | x   | 00090 | 11775                  |
| CRM13216L-10EA |             | <i>Escherichia coli</i>                                               | L    | NCTC®  | 13216      | 30-120         | x   | 00202 | -                      |
| VT000122-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 516        | 15-80          | x   | 00012 | 8739                   |
| VT000123-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 516        | 80-130         | x   | 00012 | 8739                   |
| VT000126-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 516        | 1,000-10,000   | x   | 00012 | 8739                   |
| VT000127-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 516        | 50,000-150,000 | x   | 00012 | 8739                   |
| VT000132-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 434        | 15-80          | x   | 00013 | 25922                  |
| VT000133-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 434        | 80-130         | x   | 00013 | 25922                  |
| VT000136-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 434        | 1,000-10,000   | x   | 00013 | 25922                  |
| VT000137-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 434        | 50000-150000   | x   | 00013 | 25922                  |
| VT001793-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 8296       | 80-130         | x   | 00179 | -                      |
| VT001796-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 8296       | 1,000-10,000   | x   | 00179 | -                      |
| VT002023-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 9153       | 80-130         | x   | 00202 | -                      |
| VT002026-10EA  |             | <i>Escherichia coli</i>                                               | V    | CECT®  | 9153       | 1,000-10,000   | x   | 00202 | -                      |
| VT000143-10EA  | ●           | <i>Escherichia coli</i> 0157:H7 (non-toxigenic)                       | V    | CECT®  | 4972       | 80-130         | x   | 00014 | 700728                 |
| VT000146-10EA  |             | <i>Escherichia coli</i> 0157:H7 (non-toxigenic)                       | V    | CECT®  | 4972       | 1,000-10,000   | x   | 00014 | 700728                 |
| CRM12900L-10EA |             | <i>Escherichia coli</i> 0157:H7 (non-toxigenic)                       | L    | NCTC®  | 12900      | 30-120         | x   | 00014 | 700728                 |
| VT072767-10EA  | ●           | <i>Fluoribacter bozemanii</i> (formerly <i>Legionella bozemanii</i> ) | V    | CECT®  | 7276       | >100,000       | x   | -     | 33217                  |
| CRM11368M-10EA |             | <i>Fluoribacter bozemanii</i> (formerly <i>Legionella bozemanii</i> ) | L    | NCTC®  | 11386      | 500-50,000     | x   | -     | 33217                  |
| VT025046-10EA  |             | <i>Heterotrophic Organisms</i>                                        | V    |        |            | 1,000-10,000   | x   | -     | -                      |
| CRM08167L-10EA |             | <i>Klebsiella oxytoca</i>                                             | L    | NCTC®  | 8167       | 30-120         | x   | -     | -                      |
| VT000971-10EA  |             | <i>Klebsiella pneumoniae</i>                                          | V    | CECT®  | 143        | 15-80          | x   | 00097 | 13883                  |
| VT000975-10EA  |             | <i>Klebsiella pneumoniae</i>                                          | V    | CECT®  | 143        | 1,000-10,000   | x   | 00097 | 13883                  |
| VT000163-10EA  |             | <i>Lactococcus lactis</i> subsp. <i>Lactis</i>                        | V    | CECT®  | 185        | 80-130         | x   | 00016 | 9936/19435             |
| VT000167-10EA  |             | <i>Lactococcus lactis</i> subsp. <i>lactis</i>                        | V    | CECT®  | 185        | 50,000-150,000 | x   | 00016 | 9936/19435             |

\* L/V = Vitroids™/LENTICULE® discs

| Cat. No.       | Coming soon | Species                                                                     | L/V* | Origin | Strain No. | CFU Range      | CRM | WDCM  | Equivalent ATCC strain |
|----------------|-------------|-----------------------------------------------------------------------------|------|--------|------------|----------------|-----|-------|------------------------|
| VT000153-10EA  |             | <i>Lactobacillus sakei</i> subsp. <i>Sakei</i>                              | V    | CECT®  | 906        | 80-130         | x   | 00015 | 15521                  |
| VT000157-10EA  |             | <i>Lactobacillus sakei</i> subsp. <i>Sakei</i>                              | V    | CECT®  | 906        | 50,000-150,000 | x   | 00015 | 15521                  |
| VT001063-10EA  |             | <i>Legionella anisa</i>                                                     | V    | CECT®  | 8177       | 80-130         | x   | 00106 | 35292                  |
| VT001066-10EA  |             | <i>Legionella anisa</i>                                                     | V    | CECT®  | 8177       | 1,000-10,000   | x   | 00106 | 35292                  |
| VT001067-10EA  |             | <i>Legionella anisa</i>                                                     | V    | CECT®  | 8177       | ≥100,000       | x   | 00106 | 35292                  |
| VT001807-10EA  | ●           | <i>Legionella pneumophila</i>                                               | V    | CECT®  | 8343       | >100,000       | x   | 00180 | 33156                  |
| VT001073-10EA  | ●           | <i>Legionella pneumophila</i> serogroup 1                                   | V    | CECT®  | 7109       | 80-130         | x   | 00107 | 33152                  |
| VT001076-10EA  |             | <i>Legionella pneumophila</i> serogroup 1                                   | V    | CECT®  | 7109       | 1,000-10,000   | x   | 00107 | 33152                  |
| VT001803-10EA  | ●           | <i>Legionella pneumophila</i> subsp. <i>fraseri</i> serovar 4               | V    | CECT®  | 8343       | 80-130         | x   | 00180 | 33156                  |
| VT001806-10EA  | ●           | <i>Legionella pneumophila</i> subsp. <i>fraseri</i> serovar 4               | V    | CECT®  | 8343       | 1,000-10,000   | x   | 00180 | 33156                  |
| CRM12821L-10EA |             | <i>Legionella pneumophila</i> (serogroup 1)                                 | L    | NCTC®  | 12821      | 30-120         | x   | 00205 | -                      |
| CRM12821M-10EA |             | <i>Legionella pneumophila</i> (serogroup 1)                                 | L    | NCTC®  | 12821      | 500-50,000     | x   | 00205 | -                      |
| VT002057-10EA  |             | <i>Legionella pneumophila</i> (serogroup 1)                                 | V    | CECT®  | 8734       | >50,000        | x   | 00205 | -                      |
| VT000176-10EA  |             | <i>Listeria innocua</i> serotype 6a                                         | V    | CECT®  | 910        | 1,000-10,000   | x   | 00017 | 33090                  |
| CRM11994L-10EA |             | <i>Listeria monocytogenes</i>                                               | L    | NCTC®  | 11994      | 30-120         | x   | 00019 | -                      |
| CRM11994M-10EA |             | <i>Listeria monocytogenes</i>                                               | L    | NCTC®  | 11994      | 500-50,000     | x   | 00019 | -                      |
| VT001092-10EA  |             | <i>Listeria monocytogenes</i> serovar I/2a                                  | V    | CECT®  | 5873       | 15-80          | x   | 00109 | 35152                  |
| VT001093-10EA  |             | <i>Listeria monocytogenes</i> serovar I/2a                                  | V    | CECT®  | 5873       | 80-130         | x   | 00109 | 35152                  |
| VT001096-10EA  |             | <i>Listeria monocytogenes</i> serovar I/2a                                  | V    | CECT®  | 5873       | 1,000-10,000   | x   | 00109 | 35152                  |
| VT000212-10EA  |             | <i>Listeria monocytogenes</i> serovar 4b                                    | V    | CECT®  | 935        | 15-80          | x   | 00021 | 13932                  |
| VT000213-10EA  |             | <i>Listeria monocytogenes</i> serovar 4b                                    | V    | CECT®  | 935        | 80-130         | x   | 00021 | 13932                  |
| VT000216-10EA  |             | <i>Listeria monocytogenes</i> serovar 4b                                    | V    | CECT®  | 935        | 1,000-10,000   | x   | 00021 | 13932                  |
| VT000217-10EA  |             | <i>Listeria monocytogenes</i> serovar 4b                                    | V    | CECT®  | 935        | 50,000-150,000 | x   | 00021 | 13932                  |
| VT001813-10EA  |             | <i>Mucor racemosus</i>                                                      | V    | CECT®  | 20821      | 80-130         | x   | 00181 | 42647                  |
| VT000232-10EA  |             | <i>Proteus mirabilis</i>                                                    | V    | CECT®  | 4168       | 15-80          | x   | 00023 | 29906                  |
| VT000233-10EA  |             | <i>Proteus mirabilis</i>                                                    | V    | CECT®  | 4168       | 80-130         | x   | 00023 | 29906                  |
| VT000237-10EA  |             | <i>Proteus mirabilis</i>                                                    | V    | CECT®  | 4168       | 50,000-150,000 | x   | 00023 | 29906                  |
| CRM10662L-10EA |             | <i>Pseudomonas aeruginosa</i>                                               | L    | NCTC®  | 10662      | 30-120         | x   | 00114 | 25668                  |
| CRM10662M-10EA |             | <i>Pseudomonas aeruginosa</i>                                               | L    | NCTC®  | 10662      | 500-50,000     | x   | 00114 | 25668                  |
| VT001142-10EA  |             | <i>Pseudomonas aeruginosa</i>                                               | V    | CECT®  | 118        | 15-80          | x   | 00114 | 25668                  |
| VT001143-10EA  |             | <i>Pseudomonas aeruginosa</i>                                               | V    | CECT®  | 118        | 80-130         | x   | 00114 | 25668                  |
| VT001145-10EA  |             | <i>Pseudomonas aeruginosa</i>                                               | V    | CECT®  | 118        | 1,000-10,000   | x   | 00114 | 25668                  |
| VT000243-10EA  |             | <i>Pseudomonas aeruginosa</i>                                               | V    | CECT®  | 110        | 80-130         | x   | 00024 | 10145                  |
| VT000246-10EA  |             | <i>Pseudomonas aeruginosa</i>                                               | V    | CECT®  | 110        | 1,000-10,000   | x   | 00024 | 10145                  |
| VT000256-10EA  |             | <i>Pseudomonas aeruginosa</i>                                               | V    | CECT®  | 108        | 1,000-10,000   | x   | 00025 | 27853                  |
| VT000257-10EA  |             | <i>Pseudomonas aeruginosa</i>                                               | V    | CECT®  | 108        | 50,000-150,000 | x   | 00025 | 27853                  |
| VT000262-10EA  |             | <i>Pseudomonas paraaeruginosa</i> (formerly <i>Pseudomonas aeruginosa</i> ) | V    | CECT®  | 111        | 15-80          | x   | 00026 | 9027                   |
| VT000263-10EA  |             | <i>Pseudomonas paraaeruginosa</i> (formerly <i>Pseudomonas aeruginosa</i> ) | V    | CECT®  | 111        | 80-130         | x   | 00026 | 9027                   |
| VT000264-10EA  |             | <i>Pseudomonas paraaeruginosa</i> (formerly <i>Pseudomonas aeruginosa</i> ) | V    | CECT®  | 111        | 130-300        | x   | 00026 | 9027                   |
| VT000266-10EA  |             | <i>Pseudomonas paraaeruginosa</i> (formerly <i>Pseudomonas aeruginosa</i> ) | V    | CECT®  | 111        | 1,000-10,000   | x   | 00026 | 9027                   |
| VT000267-10EA  |             | <i>Pseudomonas paraaeruginosa</i> (formerly <i>Pseudomonas aeruginosa</i> ) | V    | CECT®  | 111        | 50,000-150,000 | x   | 00026 | 9027                   |
| VT001153-10EA  |             | <i>Pseudomonas fluorescens</i>                                              | V    | CECT®  | 378        | 80-130         | x   | 00115 | 13525                  |
| VT001156-10EA  |             | <i>Pseudomonas fluorescens</i>                                              | V    | CECT®  | 378        | 1,000-10,000   | x   | 00115 | 13525                  |
| CRM09528L-10EA |             | <i>Raoultella planticola</i> (formerly <i>Klebsiella aerogenes</i> )        | L    | NCTC®  | 9528       | 30-120         | x   | -     | -                      |

\* L/V = Vitroids™/LENTICULE® discs



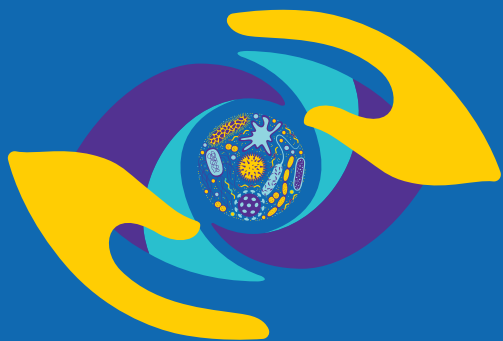
| Cat. No.       | Coming soon | Species                                                                      | L/V* | Origin | Strain No. | CFU Range      | CRM | WDCM  | Equivalent ATCC strain |
|----------------|-------------|------------------------------------------------------------------------------|------|--------|------------|----------------|-----|-------|------------------------|
| CRM09528M-10EA |             | <i>Raoultella planticola</i> (formerly <i>Klebsiella aerogenes</i> )         | L    | NCTC®  | 9528       | 500-50,000     | x   | -     | -                      |
| RMF03191L-10EA |             | <i>Saccharomyces cerevisiae</i>                                              | L    | NCPF®  | 3191       | 30-120         | x   | -     | 9763                   |
| RMF03191M-10EA |             | <i>Saccharomyces cerevisiae</i>                                              | L    | NCPF®  | 3191       | 500-50,000     | x   | -     | 9763                   |
| VT000583-10EA  |             | <i>Saccharomyces cerevisiae</i>                                              | V    | CECT   | 1383       | 80-130         | x   | 00058 | 9763                   |
| CRM12023L-10EA |             | <i>Salmonella enterica</i> serovar <i>Typhimurium</i>                        | L    | NCTC®  | 12023      | 30-120         | x   | 00031 | 14028                  |
| VT000302-10EA  |             | <i>Salmonella enterica</i> subsp. <i>Enterica</i> serovar <i>Enteritidis</i> | V    | CECT®  | 4300       | 15-80          | x   | 00030 | 13076                  |
| VT000306-10EA  |             | <i>Salmonella enterica</i> subsp. <i>Enterica</i> serovar <i>Enteritidis</i> | V    | CECT®  | 4300       | 1,000-10,000   | x   | 00030 | 13076                  |
| VT000307-10EA  |             | <i>Salmonella enterica</i> subsp. <i>Enterica</i> serovar <i>Enteritidis</i> | V    | CECT®  | 4300       | 50,000-150,000 | x   | 00030 | 13076                  |
| VT000303-10EA  |             | <i>Salmonella enterica</i> subsp. <i>Enterica</i> serovar <i>Enteritidis</i> | V    | CECT®  | 4300       | 80-130         | x   | 00030 | 13076                  |
| VT000312-10EA  |             | <i>Salmonella enterica</i> subsp. <i>Enterica</i> serovar <i>Typhimurium</i> | V    | CECT®  | 4594       | 15-80          | x   | 31    | 14028                  |
| VT000313-10EA  |             | <i>Salmonella enterica</i> subsp. <i>Enterica</i> serovar <i>Typhimurium</i> | V    | CECT®  | 4594       | 80-130         | x   | 31    | 14028                  |
| VT000316-10EA  |             | <i>Salmonella enterica</i> subsp. <i>Enterica</i> serovar <i>Typhimurium</i> | V    | CECT®  | 4594       | 1,000-10,000   | x   | 31    | 14028                  |
| VT000317-10EA  |             | <i>Salmonella enterica</i> subsp. <i>Enterica</i> serovar <i>Typhimurium</i> | V    | CECT®  | 4594       | 50,000-150,000 | x   | 31    | 14028                  |
| VT000292-10EA  |             | <i>Salmonella enterica</i> subsp. <i>Enterica</i> serovar <i>Abony</i>       | V    | CECT®  | 545        | 15-80          | x   | 29    | BAA-2162               |
| CRM06676L-10EA |             | <i>Salmonella enteritidis</i>                                                | L    | NCTC®  | 6676       | 30-120         | x   | -     | -                      |
| CRM07832L-10EA |             | <i>Salmonella nottingham</i>                                                 | L    | NCTC®  | 7832       | 30-120         | x   | -     | -                      |
| CRM06571L-10EA |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | L    | NCTC®  | 6571       | 30-120         | x   | 00035 | 9144                   |
| CRM06571M-10EA |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | L    | NCTC®  | 6571       | 500-50,000     | x   | 00035 | 9144                   |
| VT000357-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 59         | 50,000-150,000 | x   | 00035 | 9144                   |
| VT000342-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 435        | 15-80          | x   | 00034 | 25923                  |
| VT000343-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 435        | 80-130         | x   | 00034 | 25923                  |
| VT000346-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 435        | 1,000-10,000   | x   | 00034 | 25923                  |
| VT000347-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 435        | 50,000-150,000 | x   | 00034 | 25923                  |
| VT000322-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 239        | 15-80          | x   | 00032 | 6538                   |
| VT000323-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 239        | 80-130         | x   | 00032 | 6538                   |
| VT000324-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 239        | 130-300        | x   | 00032 | 6538                   |
| VT000326-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 239        | 1,000-10,000   | x   | 00032 | 6538                   |
| VT000327-10EA  |             | <i>Staphylococcus aureus</i> subsp. <i>aureus</i>                            | V    | CECT®  | 239        | 50,000-150,000 | x   | 00032 | 6538                   |
| CRM11047L-10EA |             | <i>Staphylococcus epidermidis</i>                                            | L    | NCTC®  | 11047      | 30-120         | x   | 00132 | 14990                  |
| VT000366-10EA  |             | <i>Staphylococcus epidermidis</i>                                            | V    | CECT®  | 231        | 1,000-10,000   | x   | 00036 | 12228                  |
| VT001596-10EA  |             | <i>Staphylococcus saprophyticus</i>                                          | V    | CECT®  | 235        | 1,000-10,000   | x   | 00159 | 15305                  |
| CRM11371M-10EA |             | <i>Tatlockia micdadei</i> (formerly <i>Legionella micdadei</i> )             | L    | NCTC®  | 11371      | 500-50,000     | x   | -     | 33218                  |
| RM10903Q-10EA  |             | <i>Vibrio parahaemolyticus</i>                                               | L    | NCTC®  | 10703      | >100           | x   | -     | -                      |
| VT001823-10EA  |             | <i>Wallemia mellicola</i> (formerly <i>Wallemia sebi</i> )                   | V    | CECT®  | 20820      | 80-130         | x   | 00182 | 42694                  |

## Negative Controls

| Cat. No.     | Coming soon | Description                                     |
|--------------|-------------|-------------------------------------------------|
| RQC0001-10EA |             | Negative Control for Vitroids™ discs, no growth |

\* L/V = Vitroids™/LENTICULE® discs

\* L/V = Vitroids™/LENTICULE® discs

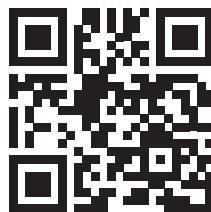


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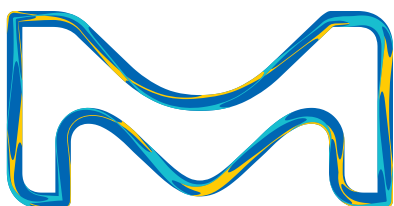
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MK\_BR12364EN Ver. 1.0  
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07/2025