

What is the test?

The **MicrobMonitor** Dip Slide is a plastic slide with sterile growth media attached contained in a transparent sterile tube. Each side of the slide carries different nutritive agar gels for culturing microorganisms, on opposite sides of the slide. The pale side has been designed to culture all microbes (bacteria, yeasts and moulds) which grow as visible discrete red/pink colonies when the slide is incubated. A count of these colonies is equivalent to a count of the number of live microbes (colony forming units, cfu) which have adhered to the agar surface, and is referred to as the Total Viable Count (TVC). The brown side of the slide will culture moulds (fuzzy or fluffy colonies) and yeasts (usually white, cream or pink round colonies).

What is the test used for?

A semi-quantitative onsite test kit designed to detect the presence of aerobic micro-organisms in water or aqueous based samples. Not designed or recommended for use on fuel or lubricants.

Background information

Microbial contamination of industrial waters and other aqueous fluids can lead to spoilage, loss of corrosion inhibitors, metal corrosion and sometimes health hazards. The range of industrial fluids which can be affected is wide and includes, process, cooling, ballast and bilge water, and metal working fluids. Water associated with petroleum products is also affected.

Test Procedure for:

testing water and aqueous fluids. Remove the Dip Slide from its container by pulling gently while twisting clockwise; hold it by the cap to avoid touching the nutritive gels. Immerse it in the water or fluid to be tested for a few seconds or, expose the slide to a spray or running fluid so that the agar gel surfaces are covered. Remove the slide from the fluid and allow it to drain for a few seconds. Replace the Dip Slide into its container and press home the cap.

testing surfaces. Press each gel side of the Dip Slide against a different part of the surface to be tested. The section of the slide below the cap is flexible and bends to help you make a good contact with the surface.

The nutritive gels have now been 'inoculated' with microbes from the fluid or surface tested.

Incubation. Inoculated Dip Slides should be incubated upright at 25-30°C. A warm cupboard is usually suitable. Ensure that it is also warm overnight. It is important to begin incubation as soon as possible, and to continue incubation for several days to prevent false negative results. A provisional result can sometimes be seen for bacteria after 1 day. Yeasts and moulds grow more slowly. Slides should be checked for up to 5 days.

NB Do not disturb the slides more than absolutely necessary during intermediate checks as spores may disperse when shaken and start new colonies. As far as possible do not open the slide container to assess growth on the slide. If the temperature of the system being tested is appreciably different from ambient

Interpretation of results of water and aqueous samples

Total Viable Count (Bacteria, Yeasts and Moulds): Compare growth on the pale side of the slide to the chart provided to estimate the level of contamination in the fluid. Include any colourless colonies as well as the red/pink colonies in your assessment of cfu/ml. Note that very high numbers may lead to a confluent (continuous) growth and this could be mistakenly recorded as no growth. Compare your result to an unused slide when reading results to avoid mis-interpretation of confluent growth. **Yeasts:** Yeast colonies (see para. 1) are assessed on the brown side of the **MicrobMonitor Dip Slide** using the chart provided. **Moulds:** Mould colonies (see para. 1) also grow on the brown side of the slide and may arise from single mould spores or large segments of mould growth. The assessment of mould cfu/ml using the comparison chart is therefore only an approximate indication of the degree of mould proliferation in the system tested. Some translucent mucoid (slimy) colonies may grow on the brown side of the slide; these are bacteria and should be ignored in the mould/yeast assessment (see para 1).

Interpretation of results of surface samples

The surface area of each gel is 10 cm² and the number of cfu on each gel is an indication of the contamination of the surface tested, e.g. 50 cfu on the gel surface is equivalent to 5 cfu per cm² on the surface tested. However, not all of the microbes on the surface tested will have adhered to the gel and the result is only semi-quantitative.

Disposal Instructions

The most convenient disposal method is to make up a few litres of a strong (c. 5%) household disinfectant (bleach or phenolic) according to the suppliers' instructions, and immerse the separated Dip Slide and the open container overnight, before disposing as normal waste. Alternatively, used slides can be incinerated or autoclaved (pressure cooked) after loosening the cap.

Storage and Shelf Life

The slides have a nominal shelf life of 9 months and the expiry date appears on the end of the box. The slides should be kept cool but not frozen. They will remain suitable for use as long as there is no visible contamination, and the agar surfaces remain smooth and adherent to the slide. Check before use that there is no growth on the slides.

Applications

The MicrobMonitor Dip Slide can be used to test all types of process and industrial water, plus the following specific applications

Water associated with fuels and oils: Microbial fouling of diesel fuel can only occur if microbes (i.e. bacteria, yeasts or moulds) have proliferated in water associated with fuel. Any fuel movements that disturb or agitate the fuel distribute these microbes and their slimes throughout the fuel; contaminated fuel causes rapid filter blocking and injector malfunction. When testing water covered by a fuel or oil layer do not dip the slide through this layer; use a pipette to remove bottom water and spray this over both sides of the slide. If a pipette is not available, discard ALL fuel/oil floating above the water before testing the water phase with the Dip Slide. NOTE: The fuel/oil phase should be tested using the ECHA MicrobMonitor2 test, not Dip Slides.

Cooling Water: Most engine cooling water will be too hot in use to permit microbial growth. In slow speed engines, cooling water growth can occur causing fouling and corrosion. Other cooling water systems can also suffer from microbial contamination particularly water in cooling towers. In cooling towers, this growth can stimulate the proliferation of Legionella bacteria, which may be dispersed from the tower in mist.

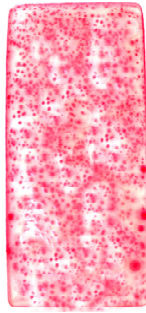
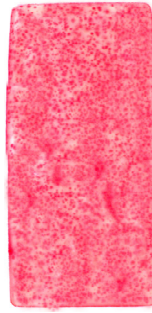
Metalworking Fluids: As well as causing fouling, corrosion and poor engineering performance, microbial growth in MWF can be a health hazard to machine operators.

Further Information

Consult ECHA Microbiology for more information on these and other applications.

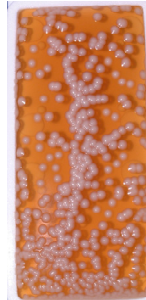
COMPARISON CHART

TOTAL VIABLE COUNT (TVC)

 10^3  10^4  10^5  10^6  10^7

TVC cfu/ml of aqueous samples.

YEAST COMPARISON CHART

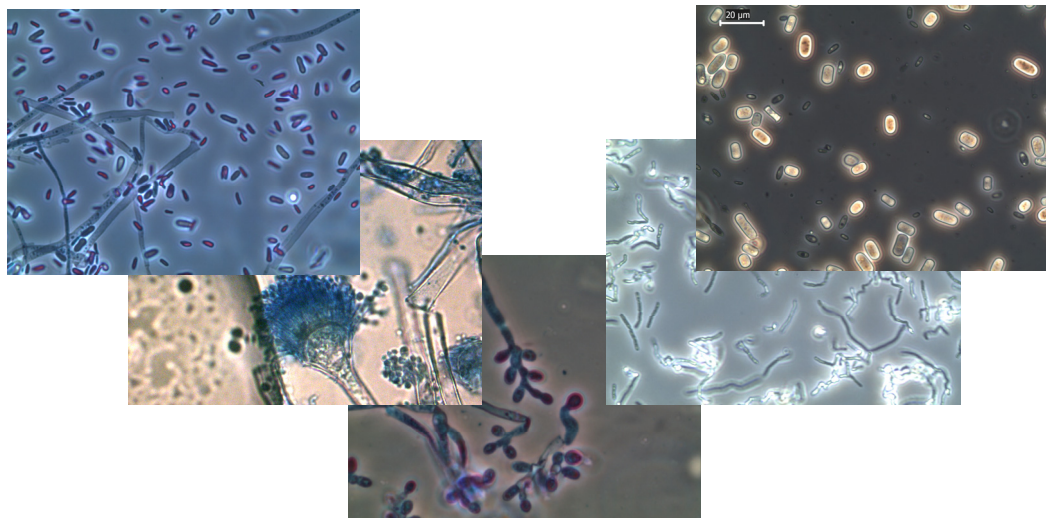
 10^3  10^4  10^5  10^6  10^7

Yeast cfu/ml of aqueous samples.

MOULD COMPARISON CHART

 10^2  10^3  10^4

Mould cfu/ml of aqueous samples.



Also available for on site testing.

- **MicrobMonitor2:** Quantitatively detects microbes in fuels and lubricants, which cause fouling, spoilage and corrosion.
- **MicrobMonitor Sig Sulphide Test:** Detects corrosive Sulphate Reducing Bacteria (SRB).
- **MicrobMonitor Sig Nitrite Test:** Detects bacteria which destroy nitrite based corrosion inhibitors.
- **MicrobMonitor Biocide Rapide:** Detects antimicrobial chemicals such as biocides.
- **MicrobMonitor Rapid WB:** Rapidly (within 1 hr) detects moderate/heavy microbial contamination in water associated with fuel.
- **Ancillary Items:** Pre sterilized samplers, sample bottles, swabs and measuring pipettes can be supplied in small or large quantities.

MicrobMonitor test kits are manufactured by:
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