To identify and total count of bacteria, fungi, yeasts and molds in liquids, on surfaces and in the air.

Bacterial and fungal contamination in liquids of industrial constructions can lead to destruction and rusting of facilities. The growth of bacteria in metal facilities, in addition to rust, creates slimy layers caused by the growth of slime, which is also associated with an unpleasant smell. The growth of fungi can also cause clogging of the pipes of liquid transmission lines.

It is necessary to regularly monitor bacteria and fungi in order to avoid widespread contamination caused by them. The earlier the contamination is detected, the faster it can be removed using biocides and the less damage to metals.

The use of test kits makes it possible to count bacteria and fungi quickly and easily. These kits are completely ready and do not require any preparation steps or advanced equipment.

On one side of the slide, the suitable culture medium for counting bacteria is placed, and on the other side of the slide, the suitable culture medium for counting fungi, molds and yeasts is placed. The use of the MicrobCheck™ TBC/YM kit provides the possibility of counting aerobic bacteria at the same time as fungi, molds and yeasts in just one test.

Almost all aerobic bacteria grow on this kit. The special substrate presents in the culture medium of these slides, by reacting with the enzymes produced in the aerobic respiration of bacteria, causes the color of the colonies to change from white to red, thus making it easier to count. After growth, the growth pattern is compared with reference images to determine the final number of bacteria in the sample.

All fungi and yeasts that contaminate industrial constructions grow on these test kits. Yeast growth is associated with pink color. Also, fungi are observed with the appearance of villi on the agar medium. This side is also compared with the reference images, just like the side of bacteria. The growth and type of microorganism should be recorded when the first signs of growth are observed, but the incubation should continue for 4-5 days in order to determine possible fungal contamination.

The accuracy of these kits is no different from common agar media and the ease of use in industrial areas is important. The use of these kits does not require special expertise and all people can easily use them. It is enough to do liquid or air sampling from the surface according to the instructions.

If you prepare a dilution from the desired sample, it is necessary to report the result for the main sample at the end. For example, a sample has a contamination of 10^7 bacteria per ml. If 1 ml of it is added to 99 ml of water and the

number of bacteria in this new dilution is examined, the amount of 10^5 bacteria per ml for this dilution is equal to 10^7 bacteria per ml of the original sample.

MicrobCheck™ TBC / YM slides have separate agar culture media on both sides for the growth of aerobic bacteria on one side and molds, yeasts and fungi on the other side. The examined surface of the slides is 8 square centimeters.

Manufacturer's Recommendation

Avoid contact with the inner wall of the Falcon and perform the test under sterile conditions.

After opening the Falcon door, place the door upside down on a clean surface with the bottom facing the ground.

Test Method

Liquid Sampling: After taking out the slide from inside the sterile falcon, dip it into the liquid under investigation and wait for ten seconds, then take out the slide and wait for a few seconds until the excess liquid is removed from the surface of the slide. After that, put the slide back inside the Falcon and close the Falcon door well.

Surface Sampling: Remove the slide from the sterile falcon and examine it in direct contact with the surface. The contact of two surfaces should be in such a way that the medium of the agar slide is completely spread over the investigated surfaces so that the maximum bacterial recovery takes place.

Air Sampling: Take the slide out of the sterile falcon and expose it to air for 15 minutes and then put it back inside the falcon.

Incubation: Choosing the right temperature is greatly influenced by the source of contamination and the application of this test. If environmental contamination is to be investigated, the temperature of 30 °C is suitable for the growth of bacteria, fungi, mold and yeast. If human pathogen samples are examined, 35 °C is better. But in general, the optimal conditions can be defined as incubation at a temperature of 30 °C for 24 to 120 hours. In the first two days, the growth of bacteria is determined. In the following days, the growth of molds, yeasts and fungi can be examined.

Interpretation of Results

Compare the growth pattern of bacteria/yeasts/fungi/molds with reference images. In this test, the number of microorganisms is reported with CFU (Colony Forming Units). Note that MPN (Most Probable Number) estimates the concentration of bacteria based on the growth in the broth medium.

Sometimes a red color may appear around the slide, which does not affect the counting of colonies and is not calculated.

Total Bacterial Count

CFU / ml	10^7	10^6	10^5	10^4	10^3	10^2	10^1
Reference Images							

Total Yeasts Count					Total Molds count		
CFU / ml	10^7	10^6	10^5	10^4	10^3	Heavy	Medium	Light
Reference Images								

Quality Control of the MicrobCheck™ TBC / YM Test Kit

To confirm the quality and performance of the MicrobCheck™ TBC / YM kit, the specified strains can be cultured and the results can be checked based on the table below. To perform this test, prepare a diluted suspension of the reference microorganism and immerse the kit slides in it.

Quality Control of Agar for Total Bacterial Count

Organism	Colony Size (mm)	Morphology	Color	Note
Salmonella enterica	1.5 – 2.5	Convex and Shiny	Red	—
Pseudomonas aeruginosa	2 – 2.5	Convex and Shiny	Red	—
Streptococcus pyogenes	0.1 - 1	Convex and Shiny	Red	—
Escherichia coli	1.5 – 2.5	Convex and Shiny	Red	—
Bacillus spp.	2 - 6	Diverse	Red	Possibility of Spreadation

Quality Control of Agar for Total Yeasts/Molds Count

Organism	Colony Size (mm)	Morphology	Color	Note
Rhizopus spp.	≤ 13.5	Fluffy	White / Pink	—
Mucor spp.	≤ 12.5	Fluffy	White mycelium with light brown spores	—
Fusarium spp.	≤ 10	Fluffy	White / Pink	—
Aspergillus flavus	≤ 8	Fluffy	White mycelium with black spores	Possibility of Spreadation
Candida spp.	≤ 1.5	Convex and Shiny	Pink	—

Best Time to Use

The expiration date of the kits is 6 months and it is necessary to store them in the refrigerator. It is recommended to avoid frequent temperature changes and freezing. It is possible to see a small amount of moisture in the bottom of the Falcon. This has no effect on the performance of the test kit. In case of improper storage, signs of growth, dehydration, or separation of agar from the slide may be observed. In this case, do not use test kits.

Disposal

Test kits are completely contaminated after use and growth of bacteria, yeasts and molds. As a result, it is necessary to autoclave them or burn them in a furnace. If this is not possible, open the falcons under the laboratory hood and fill it with bleach liquid with a concentration of 5 to 10%. Let it sit overnight and then throw it away.