

Microbial contamination in jet fuel tanks

Easicult TTC

Hygicult Y&F (Easicult M)

Easicult® – dedicated to quality

Aidian's Easicult TCC and Hygicult Y&F (Easicult M) are culture media dipslides that can be used for simple monitoring of microbial contaminations jet fuel tanks. Follow the instructions of the aircraft maintenance manual on how to take the sample from the fuel tank and follow the Easicult product manuals to easily test microbial contaminations.

Life in fuel tanks

Microbiological contamination in fuel tank can cause operational problems such as corrosion of metallic structures, fuel quantity indication problems, and blocking of the scavenger systems and fuel filters during flight. Micro-organisms, such as bacteria, yeast and moulds, are present in the environment and therefore can easily access the fuel supply chain. These microbes live in water and feed off the hydrocarbons in the fuel. Water is usually present in the fuel tank and it can be introduced into fuel in different ways, for instance by changes in relative humidity, changes in temperature causing dissolved water to become free water or by failure in fuel handling procedures. Water is essential for microbiological growth. Microbes tend to grow in the fuel/water interface, but growth can take place also in other areas such as on the vertical surfaces of tank and on the convex shapes such as pipelines. Factors affecting the microbiological growth are:

- **Water** – The presence of water in the tank is stimulating microbiological contamination.
- **Temperature** – The optimal temperature for microbes to grow is 20 °C to 35 °C. Higher or lower temperatures may favour other micro-organisms growth or make some micro-organisms grow more slowly.
- **Aircraft design**
- **Flight operations** – For example, low altitude flights and flights in warm climates are more likely to have microbiological spoilage.

Good maintenance practices will help to prevent microbial contamination. Corrosion, microbiological mat at the water/fuel interface, and presence of sludge in tank sump samples

can visually be detected and they are indicating of heavy contamination. The most practical indicator of microbial contamination is to perform routine microbiological testing of the tank drain samples. If a contamination is found, biocides are the only real option to solve the problem.

Good practises

International Air Transport Association (IATA) recommends airlines to test for microbial contamination regularly, adjusting the testing interval based on their location and experience. The testing is recommended to be done at least yearly, but for short haul operations in tropics, monthly sampling may be necessary. If contaminations are detected, action needs to be taken according to good maintenance practices. Fuel tank decontamination instructions can be found in the IATA guidance.



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Reference

International Air Transport Association (IATA). Guidance Material on Microbiological Contamination in Aircraft Fuel Tanks, 5th ed., 2015.