

Materials and Failure Analysis

Microbiological Assay

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Contamination of surfaces and processing media can cause severe hygienic problems, e.g., in the foods or medical technologies industries. Furthermore, entire industrial plants and assemblies can suffer down-times or damage through the build-up of bio-films (so called bio-fouling). This frequently results in secondary damage such as the blockage of sieves and pipes, or even direct damage of materials by microbiological activity (MIC).

Test methods

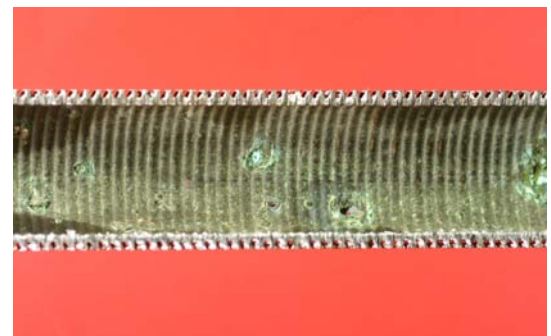
- Proof and quantification of microorganisms in aqueous media by:
 - 1) Culture techniques to determine to number of germs capable of forming colonies (only active, reproductive bacteria can be assayed like this)
 - 2) Direct microscopy, to determine the total number of microorganisms, irrespective of their physiological condition.
- Examination of materials surfaces for contamination
- Determination of the germ count in gaseous media



Microbiological examination under the Epifluorescence microscope

Areas of application

- Determination of the quality of water in technical installations (e.g., in cooling water or drinking water circuits)
- Qualify contamination on surfaces (implants, conveyor belts, and filling machines for food processing, clean rooms etc.)
- Inspection of air and water systems for contamination by infectious microorganisms (e.g., legionella)
- Analysis of microbiological damage of materials in contact with water - heat exchangers, components in hydraulic power stations etc..



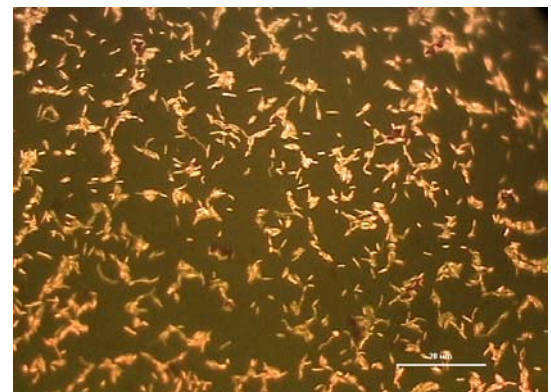
Corrosion damage by microbiological activity (MIC) in CuNi heat exchange piping

Failure analysis

- Determination of the role of bacteria in corrosion damage
- Consultancy for remedying and preventing microbiological problems (failure prevention)

Specialities

- Visualisation of microorganisms or bio-films by epifluorescence microscopy on samples of colour-tagged bacteria (the DEFT method)
- Analysis of corrosion failure induced by microbiological activity



Direct microscopy of micro-organisms in a water sample by DEFT

Delivery

Depending on extent of task