

## Microbiology Control in Metal Working Fluids

### BACKGROUND

In water based metal working fluids, bacteria and fungi growth may occur when the environment is favourable. The microorganisms that thrive in metal working fluids, generally decrease product integrity. As fluids become contaminated, product performance and machining issues arise.

### INDICATORS OF BIOLOGICAL CONCERNS

- Color change of the fluid
- pH decrease
- Foul odor
- Bacteria & fungal colonies observed via testing ( $>10^3$  cfu/mL)
- Fungal residues
- Biomass particles / Biofilms
- Clogged filters
- Poor machining performance

### MICROBIAL CONTROL

Monitor system concentration of all MWF's, typically 5% concentration or higher is recommended for optimal bio resistance performance. pH adjustments are also advantageous to keeping microorganisms from thriving. Castrol routine testing can assist in maintaining concentration levels.

If microbial issues arise, send samples to Naperville Microbiology for non-routine analysis. If fungal residues are found, physical removal of the masses followed by a full dump, clean, and recharge will be recommended for optimal cleanliness of the system. This will assist eliminating further inoculation of fresh coolant.

Lastly, if  $10^4$  cfu/mL or greater are found of bacteria in any given system sample, biocide treatments may be recommended for eliminating microbial populations.

### Industrial Technology Deployment

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