

CONTROL OF FUNGUS IN METALWORKING FLUIDS

IDENTIFYING FUNGI IN METALWORKING FLUIDS

Fungi are not evenly distributed throughout a coolant system, unlike bacteria. Fungi tend to coalesce into clumps and attach to solid surfaces. This may make it more difficult to identify the location of the viable microorganisms. It is possible that testing of small samples of fluid may not indicate fungal contamination, even though the system is in fact contaminated – resulting in false negative data.

The fungi that commonly contaminate metalworking fluids are not unique to the industrial environment. They are common environmental organisms that are found in water, soil, and air. The metalworking fluids provide an excellent nutrient source for them to feed on.

In addition to fluid testing, it is recommended that regular inspection of the system surfaces take place. Visual inspection is the most effective method to monitor a system for fungal growth. The odor of the system can also indicate a significant change in characteristics and may be a warning sign for positive fungal contaminants.

Proper sampling and detection should include analysis of any biomass found in the system to determine if it is composed of bacteria, fungus, or both. Any visible fungal growth should be removed from the system to eliminate an inoculation source.

SYMPTOMS OF FUNGI

- Change in odor (musty locker-room, or rotten egg)
- Emulsion instability
- Corrosion (on the machine tool, machine surfaces, and machined parts)
- Build up in biomass (visible growth on machine surfaces)
- Reduced tool life
- Clogged filters
- Reduced fluid flow

PREVENTION AND TREATMENT

Biomass control strategies should focus on prevention. It is easier to prevent the biomass from forming than it is to remove an existing biomass. It is important to clean a system thoroughly between fluid changes. Any biomass left behind in the system will quickly contaminate new fluid. After a dump, clean, and recharge of a fungi infested system, the fresh fluid should be treated with an appropriate fungicide to eliminate any residual fungal growth not removed during the cleaning process. Shock treatments of fungicide should be made in response to any indication of fungal growth in the fluid and after identification of fungal growth on the machine surfaces.

Biocide and fungicide treatments should always be made with locally registered products for each customer site. Never treat above the recommended dosages provided by the manufacturer.

APPENDIX

FUNGICIDE TREATMENT OPTIONS

- **BIOBAN O 45 ANTIMICROBIAL** (formerly known as Kathon 893MW): Fungicide ONLY; best used as a long-term fungicide. Oil soluble, not compatible with synthetic fluids. Effectiveness in tramp oil contaminated semi-synthetic or soluble oil systems is reduced. Use water-soluble treatment option in these situations.
- **KATHON 886 MW**: Controls bacteria and fungi. Excellent for quick kills, breaks down quickly. Not good for long term protection. Water-soluble, do not add within 24 hours of concentrate or caustic additions.
- **SODIUM OMADINE 2000**: Fungicide at low doses, effective against bacteria at higher does rates. Sodium Omadine 2000 is a water-soluble product. This product has performed very effectively in tramp oil contaminated systems. Note: Carrier is MEA (monoethanolamine).

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