

SLUDGE DISPOSAL- SOVEREIGN KBF REFLECTS THE STATUS OF THE EMULSION

As long as coolant emulsion is fresh, the problem of lump formation and sludge disposal is not envisaged. This problem occurs typically with continuous usage of coolant emulsion.

EFFECTS OF WATER: Water as a solvent has many **advantages:**

1. *Excellent cooling property*
2. *Polarity*
3. *Low cost*

Nevertheless water has many **disadvantages:**

1. *High corrosiveness*
2. *No lubricity*
3. *Bad cleaning Power*
4. *Strongly supports microbial growth*

During the continuous machining process water gets continuously evaporated depriving of its advantages but leaving behind the cumulative affect of its disadvantages.

FUNGUS GROWTH: Fungi are the diverse group of plant like organism that do not contain chlorophyll and are not able to produce their own energy food source. The size of the fungal cells is approx. 10 micron.

In adverse conditions, the fungal cell forms spores, which are difficult to be penetrated and eliminated. The presence of Fungi results in following problems:

1. Chemical reactions with the surroundings-coolant
2. Drastic reduction in pH
3. Production of intense odour, tastes and toxins
4. Production of bio-films
5. Bio fouling and plugging of the circulation systems
6. More serious problems caused by fungi is that, Fungal Colonies provide an optimum growth environment for the bacteria, Fungi also supports production of bacterial colonies. It provides nutrients to the colonies.
7. The fungal growth hampers the dust cake build up on the filter media, which is desired for higher filtration efficiency and better coolant clarity.

Fungal growth is very difficult to be killed or eradicated. Only way to get rid of fungus is to have a careful and thorough cleaning of the entire coolant circulation loop with the help of special cleaning agents.

BACTERIAL GROWTH: Many bacteria present in emulsion secrete polymers of polysaccharides and/ or protein forming Glycocolyx which cements, cells and particles together much as mortar holds brick. Formation of hard rock like sludge sticking to the filter system is an indication of fungal and bacterial growth.

EFFECT OF BIO STABILIZERS: Boron and Boronated additives are typically used as Bio-stabilizers in the emulsions. The disadvantage of boronated coolant can be seen in case of over concentration with continuous evaporation of water during machining process.

This over concentration of Boronated additives leads to formation of sticky residues, which affects the machine part, work place and also the sludge.

COOLANT pH: In view of the Tropical climatic conditions, type of water and handling of the coolant, invariably the pH drops down below 8.5. In such an eventuality, the '**wetability**' and '**detergency**' of the coolant drops down.

GENERAL OBSERVATION: "The Filter System does the job of arresting sludge contamination from the coolants and in no which way changes the intrinsic property either of the coolant or of the sludge.

"On the contrary the filter system and the filter media serve as an indicator to the changing status of the coolant".

"Changes in appearance of the filter media should promote the additional investigation of the coolant".

"Oil or wet residues on the filter media can be an intimation of presence of tramp oil or of the lubricants becoming unstable– this typically coincides with continuous addition of concentrate"

"Little to know, residue on filter media may also indicate a problem with the detergency, wetting cleaning action of the lubricants"