



Innovation in Metalworking Fluids



What's In A Coolant?

The metalworking fluid that is currently flowing through your shop is more than just oil or a combination of oil and water; each fluid is a unique balance of additives and chemistry.

The top two functions required of a metalworking fluid are lubrication and cooling. The degree of each is determined by the application: hard to machine metals in extreme applications will require more lubrication meaning increased oil content, lubricity additives, and extreme pressure additives; high speed and high pressure applications will require more cooling meaning high water content and little to no oil. In addition to these two functions there are also secondary properties required of the coolant that need to be considered. Additives are incorporated into coolants that prevent microbial growth and rusting in water-based fluids. One of the top causes of metalworking fluid failure requiring a full machine clean out is microbial growth. As bacteria and fungus grow, they will release acidic by-products causing the pH to drop and the coolant to become near neutral or even acidic. This causes rusting of the machine parts and tools and leads to a very unpleasant odor. Machine and tool costs are a significant part of the manufacturing process which is why metalworking fluid formulators take great care to balance the number and ratios of additives, water, and oil. In addition, complete machine clean outs will halt production causing lost time and decreased output.





It is essential that a fluid management program be put in place to monitor the metalworking fluids. Ensuring the concentration is within the recommended range promises that the right amount of additives are flowing through the machine to protect the parts and tool, prevent microbial growth, and produce parts with the desired finish. Recording trends in pH and comparing to concentration can help with early detection of problems. Understanding what type of water to use for make-up coolant and at what treat rate to add your concentrate will also ensure that the system is continuously balanced with the proper level of additives.

Remember, coolants are balanced formulas with additives that are crucial to specific operations. Take care of them and they will take care of the machine they are used in!



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