Foam in Your Wash Tank
Session Questions and Answers

Q: Are solvents less likely to foam?

A: Yes and no. Solvents generally have very low surface tension, however, one would use solvents in practical applications such as immersion washers or vacuum systems. Therefore, we've avoided that problem of entrained gas and solvent washing by using one of those two types of parts washers.

Q: Are there any soils that contribute to foam more than others?

A: One of the most common foaming soils, or the new generation oils and coolants that contain surfactants inside of them, is the water-soluble coolants that are essentially emulsions. They work by surfactant technology as well. If you're using water-soluble coolant, you're automatically adding some level of surfactant into your bath. A second way that you can add in a lot of surfactant without knowing it is in the green movement, using a vegetable oil or an animal fat as they store natural oil. Fats are actually the way we used to form soap way back in the day. Most of our parts washing detergents are alkaline so when you introduce that alkaline soap into a natural oil, you get a saponification reaction and every time you do that, you're creating more and more surfactant. Those soils especially tend to foam out of a washer before anyone knows what's going on.

Q: Why does my rinse tank foam?

A: Rinse tanks generally foam due to cross contamination. Essentially, when you're rinsing off the surfactant on your part, you're dumping that surfactant into your rinse tank creating a low level of concentration inside of the rinse tank lowering the surface tension and creating foam. The best way to prevent foaming in a rinse tank is by chemical isolation aka setting up a small spray bar to pre-rinse the parts and either having that go to drain or feed back into the wash tank where we already have a sufficient surfactant concentration to create that cloud point.

Q: My wash bath is cloudy and it is still foaming, what should I do?

A: In general, the cloud point is because of that surfactants and the anti-foam agents that we've built into the wash chemistry. The first thing to do is add in a defoamer. In this case, less is more with defoamers. Small amounts go a long way. On top of that, really take a look at what your process conditions are. What temperature are you running at? A good solution is to raise the temperature, maybe by bringing out even more of the surfactant if you are running a cloud point surfactant then you can cut down some of that foam so it's not propagating as much. Secondly, try to remove some of the oil from the system that could be eating some of your surfactant. Lastly, when in doubt dump it out. Change out your wash solution, start fresh, and try to attack the problem from there.

Q: When the temperature is increased does the defoamer go on top of the chemical?

A: Eventually yes. If you've ever used a spray chemistry in an ultrasonic system, one thing that can happen is that the ultrasonic can cause the foam to pop out of solution and basically create what's almost like an oil layer on top of the solution. The cloud point is interesting because as long as you are close to that cloud point, you've basically given the defoamer enough energy to pop out a solution to create a phase separation but not enough to really jump all the way out and create two different phases. That's why it appears cloudy. If you're able to let your solution settle over time, you may see that phase separation, but mostly in spray system we don't get that far because we are constantly pumping solution through spray bars and changing conditions making it more dynamic.