

Mau-Sherwood Supply Company

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Why is pH a factor in parts cleaning?

In the industrial cleaner world “cleaning” is defined as the removal of soil(s) from a given substrate. The key to proper cleaning is to identify the soil(s) and the substrate. You have to select the cleaner that is going to remove the soil, whether it’s oil, grease, carbon, or cutting fluid residue, without damaging the substrate, which in many cases is metal.

Further what works for one metal will sometimes damage another metal. Usually, the determining factor is the pH of the working solution. The pH can be found on the MSDS for the fluid, the DATA sheets or measured with pH paper. The pH scale runs from 1-14 with 7 being the neutral or middle point. The lower the number, the more acidic. The higher the number, the more basic or alkaline the product.

Most metals rust or corrode in acidic environments. For that reason, most cleaning fluids are alkaline. Aluminum parts generally like a pH of 4-9. When the pH is above or below that range and there are no “inhibitors” to stop corrosion, the shiny aluminum can turn to a white powdery oxide or blackened metal. Carbon steel generally likes a range of 5-12, but will tolerate a pH as high as 14. Use a cleaner with a pH too low for steel, and you will see a red powder or stain on the surface—commonly referred to as rust.

Different metal alloys have different tolerances— for example, stainless steel tends to corrode less easily and has a wider pH tolerance than steel. Magnesium usually is washed with cleaners above pH 12 to minimize oxidation. Titanium has a high tolerance for alkaline pHs. The yellow metals – copper, brasses, and bronze – generally do well with a pH of 8-10. When they corrode, they tend to turn shades of black or green.

If you consider the substrate and use compatible pH cleaning fluids you will avoid many of these problems.

Ask your Mau-Sherwood sales representative for additional information or pricing on any of the mentioned products.

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