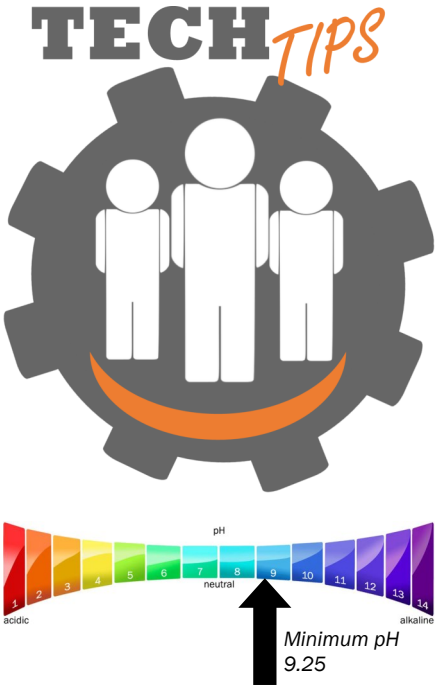
Slurry pH



The pH of a slurry is a property that requires monitoring and maintenance. Slurry pH needs to be monitored with a pH meter. Using pH papers does not give accurate results.

A minimum pH of 9.25 is common to most colloidal silica based systems. The change in pH is as important as the actual pH value. If there is a sudden pH change, it is an indication of slurry contamination. There are many possible causes for a pH drop in a slurry.

Although not always possible, it is best to identify and correct the specific sources of declining slurry pH. By identifying the source of declining slurry pH, the appropriate corrective action can be applied.

Source #1

The residues left from soluble wax removal can also affect the pH of the slurry. Residue films that can redissolve in the slurry can lower the pH with the acidic residues being the most potent.

Corrective Action

Improved cleaning and rinsing methods must be implemented in the process. The pH of the rinse water should be maintained above 7 with ammonium hydroxide so any acid residue is neutralized.

Source #2

Many types of bacteria and algae can grow in colloidal silica. As either bacteria or algae grow, they change their environment as well and can be a cause of pH change.

Corrective Action

Small quantities of bactericide and/or algaecide can be added to the slurry to kill contaminants.

Source #3

The use of zircon in a slurry tends to depress the pH over time. There are many types of zircon on the market including: raw, acid washed and calcined. The organics left in the raw zircon can be leached out of the powder and affect the pH, as can the acid residue from acid washed zircon . Calcined is best for use in slurries, as the organics are burned and no acid is used in processing.

Corrective Action

When using zircon, some pH drop may still occur.

Making pH Adjustments

As noted, it is not always possible to identify the specific cause of pH decline. If pH is 9.25 or below, make adjustments to stop/slow down further pH drop. To do this, make a solution of either 150 ml of reagent grade ammonium hydroxide or 80 ml of Triethanolamine (TEA) in 1 gallon of deionized water. Use water solution to adjust for viscosity or high binder solids, as warranted.

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