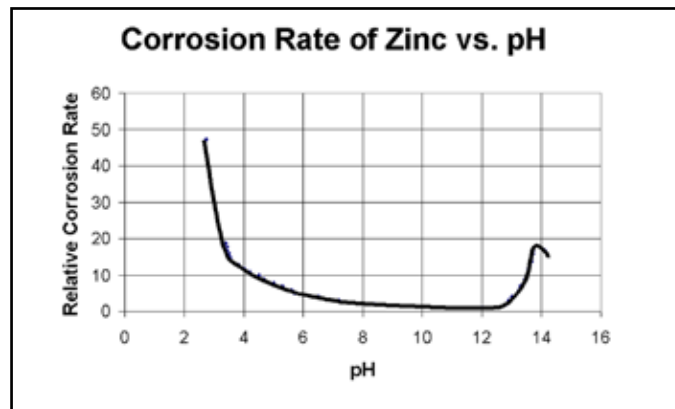


Question of the Month

Q: Is galvanized steel appropriate for use in applications with acidic or alkaline chemical solutions?

A: Acidic or basic solutions can be corrosive to all types of steel, including galvanized steel. There are times though when it is necessary to have corrosion protection in these harsh chemical environments. This article will discuss the performance of galvanized steel in low or high pH environments.

Galvanized steel performs best in solutions with a pH in the range of 5.5 to 12. pHs between 3 and 5.5 (acidic) or 12 and 13.5 (basic) are corrosive to galvanized steel, but the galvanized coating will still give corrosion protection to bare steel, although the protection will only last for a few years. If a longer service life is desired, then a duplex system using an acid or base resistant paint or epoxy over the galvanized coating is recommended. In the figure, you'll see the relative corrosion rate of galvanized steel related to the pH of its environment. For example, say you had a 4 mil thick coating; you'd get about five times as much service life from this coating at pH 3.5 as you would at an approximate pH 2.5.



Chemical environments with pHs below 3 or above 13.5 are not recommended for galvanized steel due to the rapid corrosion of the galvanized coating. Other corrosion protection systems that can be used in these chemical environments where galvanized steel is not recommended include stainless steel or polymers. In addition to pH, corrosion of galvanized coatings is also affected by the concentration of the acid or base in the solution, agitation, aeration, temperature, polarization and if inhibitors are used.

Talking to your customer about the performance of galvanized steel in acidic or basic environments is the best way to ensure they will have a fair estimate of service life of their galvanized steel.