

Sulfuric vs Sulfurous: What's the Difference and Significance?

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Abstract

Up until now, the most popular and conventional way to attempt to control the pH within most of our systems has been to use sulfuric acid (H_2SO_4), a strong acid that donates both hydrogen protons (H^+) all at once. Although the use of this material is common and proven itself to be somewhat effective, there are several major and inherent disadvantages regarding its use. This is because it entails a complex supply-chain network that, more often than not, requires the material to be manufactured at remote off-site locations; held in containment facilities; transported in bulk; etc., prior to introducing and using it (to amend the pH of systems we need to control). For these reasons, the importation and use of an acidifying input such as sulfuric results in higher operating costs and plant inefficiency. Fortunately, there is another way to acidify and control the pH of our systems by using a device such as a Harmon SO_2 -Sulfurous Acid Generator (aka sulfur burner). This device is designed to oxidize sulfur (S) to produce sulfur dioxide gas (SO_2), which is then wet-scrubbed into the water derived from within the system itself to form sulfurous acid (H_2SO_3), which then sequentially donates the acidifying hydrogen protons (H^+) needed to effectively control and maintain the pH of that system. By liberating the acidifying hydrogen protons directly from the existing on-site water, this method replicates the Natural Acidification Process that controls and maintains the pH of planet Earth. The purpose of this poster is three-fold: 1.) To illustrate and compare the differences between these two acidifying materials in greater detail; 2.) To illuminate how and where the integration of the Natural Acidification Process can be used to improve the operational performance of our existing systems even more; 3.) To submit the concept of the Natural Acidification Process as the foundation and our single most important tool we have available to help us solve our most vexing environmental challenges.