

The most common approach to testing solutions of peracetic acid is an *iodometric titration*. In this reaction, an oxidizer (such as PAA) oxidizes iodide to iodine, starch is used to indicate the presence of iodine, and then the iodine is titrated using sodium thiosulfate as a reducing agent to reduce the iodine back to iodide. This method has been adapted to small dropper-style titration kits that can be used in the field for dilute solutions of peracetic acid.

The iodometric test is a suitable test for many oxidizers, and is not specific to peracetic acid. Because of this, there is a problem: solutions of peracetic acid also contain another oxidizer – hydrogen peroxide. As it turns out, though, hydrogen peroxide reacts much slower with iodide than peracetic acid.

Many “generic” peracetic acid test kits make the assumption that hydrogen peroxide reacts so much slower than peracetic acid that we can neglect its contribution to the test result. With this assumption, the test result actually becomes a measurement of peracetic acid *and* some hydrogen peroxide. As a result, you have less peracetic acid in your system than you think you do.

In an analytical quality control laboratory, this problem is solved by first titrating and neutralizing the hydrogen peroxide with a very selective procedure, then titrating the peracetic acid. In this way both the hydrogen peroxide and peracetic acid can be independently quantified and all interferences are removed.

However, Masters test kits employ a clever technique to “activate” the hydrogen peroxide so it reacts with the iodine just as fast as the peroxide. The test then measures the total amount of hydrogen peroxide and peracetic acid. Each of our peracetic acid products has a distinct ratio of hydrogen peroxide to peracetic acid, and this is taken into account in the instructions that tell the user how many PPM per drop of titrant the solution contains.

While it may seem that having to use a different “correction factor” for each product adds an additional layer of complexity for the testing, the reality is that it really doesn’t. Most customers deal entirely with one formula – specific to their industry – so they will only deal with one “correction factor” (the number of ppm of peracetic acid per drop of titrant). The end result with the Masters test kit is that there are no interferences, and accurate testing results.

The order of addition of reagents is also improved with the Masters test kit. Now that pH adjustment of poultry chillers up past neutral is a common practice, pH effects of the peracetic acid solution on the test method must be considered and accounted for. These can cause significant errors in a test kit not designed to properly buffer the solution as the Masters kit does.

The Masters peracetic acid test kit is produced specifically for Enviro Tech peracetic acid products, and is the only titration kit recommended for use with our products. They are product number D-10015-02 and can be purchased by calling Masters at (630) 238-9292.