

# With Limited pH Tolerance, are **Enzymes Worth the Trouble?**



# The Challenge:

## The Enzyme/Mill pH Mismatch

Some 10 to 15 years ago, pulp mills like yours tried using enzymes to aid the bleaching process.

The trouble is, yesterday's enzymes can only tolerate a pH range between 7.0 and 7.2—not the 8.5 to 11.0 range where most mills operate. Because of this, you have to apply acid to bring the pH back into a range where the enzymes can work.

Not only does this add cost and complexity to your operations, natural fluctuations within the mill mean there's no guarantee you can keep the pH within this tight 7.0 to 7.2 band.

**But that's just the beginning of the drawbacks...**



Adding acid to brownstock releases dangerous hydrogen sulfide gas



Equipment can rapidly corrode, leading to failures and unforeseen capital costs



Artificially dropping the pH causes the lignin and hemicellulose to form a shell around the fiber, inhibiting effective bleaching

Add it all up, and it's no wonder why the common perception is **enzymes are simply not worth the headache.**



# The Solution: Deploy Advanced Enzyme Technology— Without Hassle

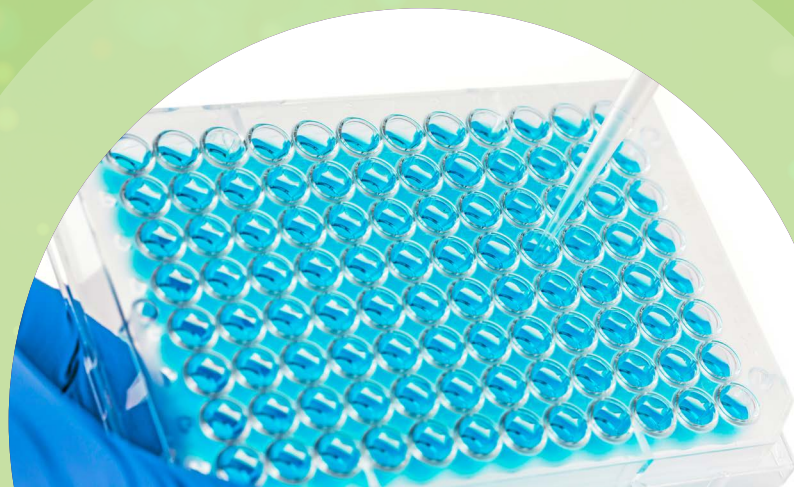
You don't want to fuss with your pH if you don't have to. When you use Buckman's Vybrant<sup>®</sup>, you can realize all the benefits of our enzymatic technology for brightness—without taking additional steps to artificially lower your brownstock storage pH.

By taking advantage of the highest pH available for a bleaching enzyme, you'll avoid added capital costs. Plus, Buckman will work with your operators to show them how to take full

advantage of this breakthrough chemistry in a way that matches how they work. As we work to increase Vybrant pH tolerance levels even further, you'll have even greater freedom to operate your mill in the way you want.

Only with Buckman will you find this degree of pH tolerance—in terms of both range and absolute level. As a result, you'll make your bleaching operations simpler, more cost-effective and safer.

**Vybrant technology** has a **higher and broader pH tolerance**, enabling it to operate at a pH of 10.2 and below.



# Continue Operating Your Way

The value of enzyme-enhanced bleaching, delivered in a manner that matches how your mill operates. That's what you'll get when you work with Buckman.

With Buckman, **you won't need to manage a costly, complex, acid-based pH-reduction process**, making it easier to conduct initial trials and quickly transition to full production.

You'll **change your organization's opinion** about using enzymatic technology for brightness.

And you'll **realize the benefits that come with decreased chlorine dioxide usage**—including cost, sustainability, yield and safety—without any of the negative side effects you experienced in the past.



**Interested in learning more?**  
Please visit our website to get started.