



**UNLOCK THE NITROGEN.**

**UNLEASH THE POTENTIAL.**

## **Improve yeast performance and boost ethanol yield with Bulab<sup>®</sup> 8505 enzymatic FAN release.**

Getting more performance from yeast depends on getting more useable nitrogen from the feedstock. That's why Buckman has developed Bulab 8505 with advanced enzymatic technology that boosts the release of Free Amino Nitrogen (FAN). By ensuring a continuous supply of readily assimilated nitrogen, Bulab 8505 helps

maintain a yeast population that is healthier, generates less glycerol, and utilizes glucose more effectively to improve ethanol yield.

Unleash the potential of your ethanol plant. Feed the yeast with Bulab 8505, and feed your bottom line.



# GET MORE VALUE OUT OF EVERY TON OF FEEDSTOCK.

## Leverage the advanced enzymatic technology of Bulab® 8505.

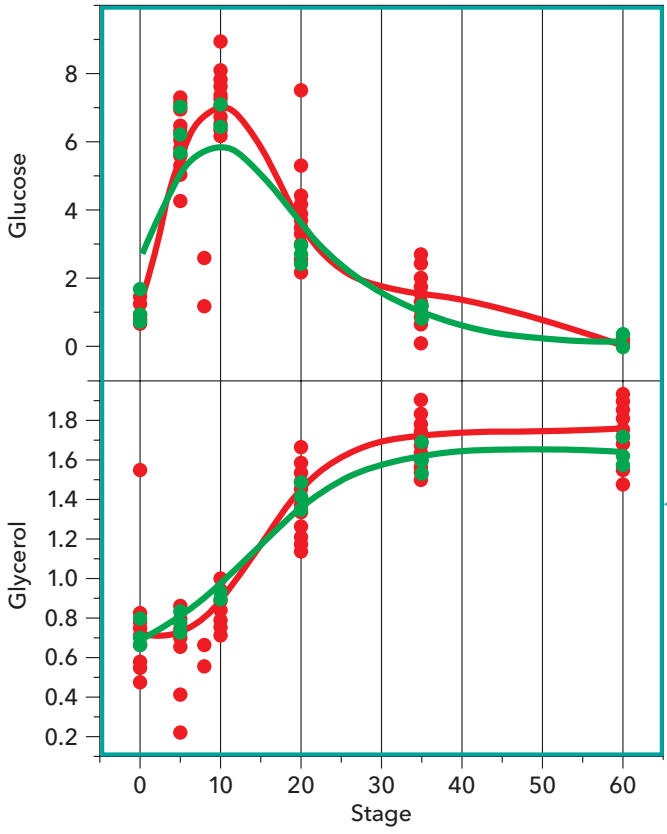
The potent enzymatic action of Bulab 8505 liberates nitrogen in feedstock that otherwise would not be available and provides it as FAN, free amino nitrogen, the most utilizable format for yeast cells. By bypassing the cellular processing needed to convert urea to a usable form, yeast cells can more efficiently go about the work of producing ethanol. You may even be able to reduce urea use. The result is superior ethanol production and greater profitability.

### Reduces glycerol production.

Glycerol is a key indicator of yeast stress. The more you have, the less efficient ethanol production will be. FAN released by Bulab 8505 de-stresses yeast, reduces the production of glycerol and minimizes the effects of fluctuations in process variables such as sugars, temperature and pH.

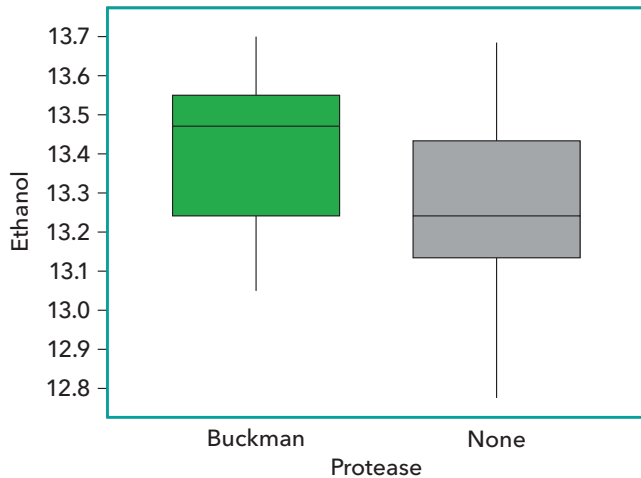
### Improves glucose utilization.

Healthier yeast is yeast that can work harder. The availability of readily assimilated FAN results in optimum glucose kinetics.



### Glycerol & Glucose vs. Stage

Data showing the kinetics of glucose utilization (top) and glycerol production (bottom) at a 100MMGPY facility comparing Bulab 8505 treatment to a competitive protease. In each case the **green line** denotes performance of Bulab 8505, and the **red line** shows performance of the competitive enzyme. Stage denotes time of fermentation in hours.

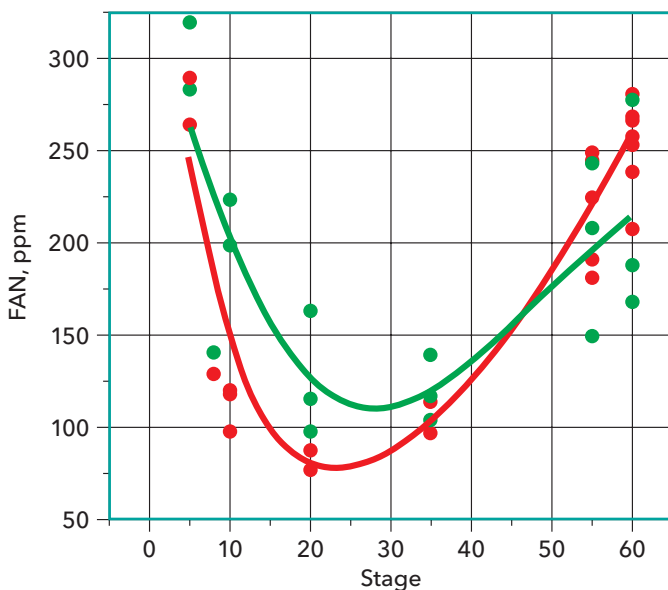


### Enhances control.

The application of Bulab 8505 can be controlled to ensure just the right amount of FAN generation for optimum propagation and fermentation.

#### Boxplot of Ethanol

Boxplot comparing batches treated with Bulab 8505 (left, n=14) with batches where protease products were not utilized (right, n=27). The data shows mean, interquartile levels (within box) and extremes of data.



### Outperforms other FAN release formulas.

Buckman is a global leader in enzymatic technologies. You can be confident that Bulab 8505 has been formulated for maximum activity and superior results.

#### FAN, ppm vs. Stage

Data showing the kinetics of FAN generation using an appropriate assay format at a 100MMGPY facility comparing Bulab 8505 treatment to a competitive protease. In each case the **green line** denotes performance of Bulab 8505, and the **red line** shows performance of the competitive enzyme. Stage denotes time of fermentation in hours.

### Easy to apply

Bulab 8505 is a ready-to-pump product that can be easily added to the propagation or fermentation stage.

## Learn more.

Ready to extract more value from your feedstock? Contact your Buckman representative or visit [buckman.com](http://buckman.com) to learn more about Bulab 8505 enzymatic FAN release from Buckman.

**Buckman**

Commitment makes the best chemistry.

# Buckman

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