FERMAID K™

***Fermaid K*™ is a blended complex yeast nutrient suitable for use in the alcohol fermentation of grape must, fruit mashes or cereal mashes. Developed by Clayton Cone of Lallemand, proper use of *Fermaid K*™ reduces the occurrence of sluggish and stuck fermentations.**

ORIGIN AND APPLICATION

In all alcohol fermentations yeast growth must occur before the anaerobic or alcohol fermentation can begin. In most wine applications, the usual inoculation rate is 25 grams per hectoliter (250 ppm or 2 pounds per 1,000 gallons) which results in an initial cell concentration of 3 to 4 million viable yeast cells per milliliter of must. Under normal conditions for virtually all types of fermentation media the cell population will increase to 100 to 150 million viable yeast cells per milliliter before growth stops and alcohol fermentation takes over.

***Fermaid K*™** helps this maximum cell density get through the stationary phase and complete alcohol fermentation as quickly and as efficiently as possible especially under limiting available nitrogen conditions. By neglecting to follow a proper nutrition and aeration strategy, the time for finishing fermentations can drag out over many take days and even weeks. Sluggish fermentations occupy much needed tank space for prolonged periods and, more importantly, they create conditions that allow the proliferation of wild yeasts and bacteria.

SLUGGISH FERMENTATIONS

As stated previously, sluggish fermentations are microbiologically unstable and can lead to the growth of undesirable organisms, both yeast and bacteria, resulting in unwanted by-products such as acetic acid, acetaldehyde and diacetyl to name a few. The reasons for sluggish fermentations are many. A few common examples are:

- Nutrient deficiencies or imbalances
- Excessively clarified musts
- Yeast inhibiting substances such as fungicides, fatty acids, V.A. and antibiotics
- High sugar content
- Temperature shock

Healthy yeast fermentation will take preferential priority over a bacterial fermentation and will have a reduced SO_2 requirement. To facilitate the efficient and rapid finish to the fermentation, ***Fermaid K*™** supplements a series of important nutrients and bio-factors. They are:

- Di-Ammonium phosphate
- Magnesium sulfate
- Inactivated yeast
- Thiamine, niacin, folic acid and calcium pantothenate

ORIGIN AND APPLICATION (cont'd)

During the stationary phase of the fermentation, a yeast cell benefits from consuming nitrogen to maintain a healthy metabolism. Under limiting yeast assimilable nitrogen (YAN) conditions below 125 mg/L, fermentation may become very sluggish and can even cease. In addition, nitrogen utilization at a lower pH is less efficient. Fermenting yeast readily use the balance of yeast assimilable nitrogen from the alpha amino acids contributed by the inactive yeast and from the di-ammonium phosphate (DAP). This balanced available nitrogen has been demonstrated to be more effective on fermentation kinetics than DAP supplements alone. The cell uses the phosphorus in the di-ammonium phosphate for ATP and phospho-lipids.

The magnesium is an important co-enzyme factor and helps yeast develop alcohol tolerance (G. Walker 2000). Thiamine, niacin, folic acid and calcium pantothenate (C. Edwards 2001) are important bio factors for good growth and fermentation. Thiamine deficiencies can result in poor growth, increased hydrogen sulfide, as well as higher levels of acetic and pyruvic acids. Pantothenate deficiencies result in increased levels of volatile acidity. Under the anaerobic environment of wine fermentations, the yeast cannot synthesize niacin.

Under conditions of restricted oxygen, ergosterol production by the yeast is virtually non-existent; yet, it is an important growth regulator. It also improves the alcohol tolerance of the yeast. In fermenting must, inactivated yeast absorb natural inhibitors and supply lipids and sterols. The cell wall portion of the yeast contains significant amounts of polysaccharides including chitin, which increase the surface area in the must and reduces the level of natural inhibitors.

In nutrient deficient juice or must

When YAN is below 125 mg/L, optimal fermentation kinetics are obtained by supplementation of an additional 100 – 200 mg/L YAN, which corresponds to 50 – 100 g/hL of DAP. Although fermentation kinetics are favorable, the wines are often bitter and harsh. In these cases supplementation of DAP with 25g/hL of ***Fermaid K™*** will result in improved mouthfeel, balance and wine quality.

INSTRUCTIONS FOR USE

For wine applications, the recommended dose is 2-4 lbs/1,000 gallons. It is recommended to split the ***Fermaid K™*** addition at the end of lag phase and again at 1/3rd sugar depletion especially for must limited in available nitrogen and high sugars.

Please refer to your distributors recommendations when treating a stuck fermentation, ***Fermaid K™*** may be added to the yeast starter culture build-up and also to the must under certain conditions. Yeast Hull supplementation can be done simultaneously.

For juice that has been highly clarified, or for poor fermentation media (corn syrup, honey, etc.), 4lbs/ 1,000 gallons ***Fermaid K™*** can be supplemented with additional yeast hulls at 2 lbs/ 1,000 gallons and 6lbs/ 1,000 gallons DAP. For best results incrementally feed the total supplements starting at yeast inoculation until ½ sugar depletion.

No UREA is used anywhere in the production of Fermaid K™.

PACKAGING AND STORAGE

- Available in 10kg box
- Store in a cool (below 25° C / 77° F) and dry environment

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