

# ***FERMAID K***

## **WINE YEAST NUTRIENT**

### **TECHNICAL INFORMATION**

#### **DESCRIPTION**

- FERMAID is a blended yeast nutrient suitable for use in the alcohol fermentation of grape must, fruit mashes or cereal mashes. Proper use of FERMAID reduces the occurrence of sluggish and/or stuck fermentations.

#### **YEAST REACTIVATION**

- 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 20 grams yeast per hectoliter (200 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.

Because of this significant increase in biomass, FERMAID helps get through the growth period and into alcohol fermentation as quickly and as efficiently as possible. Without thought for proper nutrition or aeration, the time from inoculation to the stationary phase of yeast growth can take days. By using a starter tank and supplying the yeast with both nutrients and air, the same period can be covered in two days or less. Slow starting fermentations occupy much needed tank space for prolonged periods and can 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, which can result 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
- \*Mineral and/or vitamin deficiencies
- \*Excessively clarified musts
- \*Yeast inhibiting substances such as fungicides, fatty acids, high volatile acidity, and antibiotics

- A healthy yeast fermentation will take preferential priority over a bacterial fermentation and will have a reduced SO<sub>2</sub> requirement. To accommodate the efficient and rapid growth of new yeast in the fermentation medium, FERMAID supplements a series of important nutrients and bios factors. They are:

- \*Diammonium Phosphate (DAP)
- \*Magnesium Sulfate
- \*Autolyzed yeast
- \*Thiamin, Folic Acid, Niacin, and Calcium Pantothenate

- Various sources of nitrogen are already available in the must, but not all are accessible to the growing yeast cells. During growth, the yeast cells must consume nitrogen to reproduce nuclear protein and cell protein. They also need nitrogen to produce enzymes. When the cell protein level drops below 25% (based on dry weight) growth and fermentation become very sluggish and can even cease.

In addition, nitrogen utilization at the lower pH of must may be only 70% efficient. The nitrogen in the di-ammonium phosphate is easily assimilated by the growing yeast, as is the phosphorus.

- The phosphorus from the diammonium phosphate is used by the cell for ATP and phospho-lipids. The magnesium is an important co-enzyme factor.
- Thiamin, niacin, folic acid and calcium pantothenate are all important bios factors for good growth and fermentation. Thiamin 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, niacin cannot be synthesized by the yeast.
- 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. Yeast hulls absorb fatty acids produced during fermentation in addition to supplying sterols. The membrane in the yeast hull is a good source of sterols and lipids. The cell wall portion of the yeast hull contains significant amounts of polysaccharides including chitin, which increase the surface area in the must and reduce the levels of fatty acids.

## SUGGESTED USAGE

- For normal applications, the recommended dose is 2 pounds per 1,000 gallons.
- For juice that has been highly clarified, or for poor fermentation media (corn syrup, honey, etc.), or for problem situations, the FERMAID can be supplemented with additional yeast hulls at 2 pound per 1,000 gallons.
- The FERMAID should be dispersed in the must before yeast addition. When supplementing with additional yeast hulls, it is best to add the hulls to the fermentation after the sugars have dropped 3 to 5% Brix.

## PACKAGING AND STORAGE

- FERMAID packaged in a carton with a poly liner containing 12.5 kg net weight should be stored in a cool, dry area.

## ANALYSIS

Protein	65%
P <sub>2</sub> O <sub>5</sub>	22%
Solids	84%
Total Bacteria/g	<10 <sup>5</sup>
Anaerobic Bacteria	ND
Wild Yeasts/g	<10 <sup>2</sup>
Coliforms/g	ND
E. Coli/g	ND
Salmonella/g	FREE

- No UREA is used anywhere in the production of FERMAID K.