



FERMAID O™

NATURAL YEAST-DERIVED FERMENTATION NUTRIENT



**100% yeast autolysate, OMRI listed, natural with no additives.
Smoother and cleaner ferments when compared to DAP.**

APPLICATION

Lallemand spent many years determining the best combination of yeast autolysates composed of amino acids, peptides and micronutrients that gave the best kinetic and sensory outcomes during alcoholic fermentation. After many years of research and trials **FERMAID O™** was developed.

FERMAID O™ contains 100% natural yeast derived components rich in organic nitrogen and essential vitamins and minerals. It does not contain any inorganic nitrogen (e.g. no DAP).

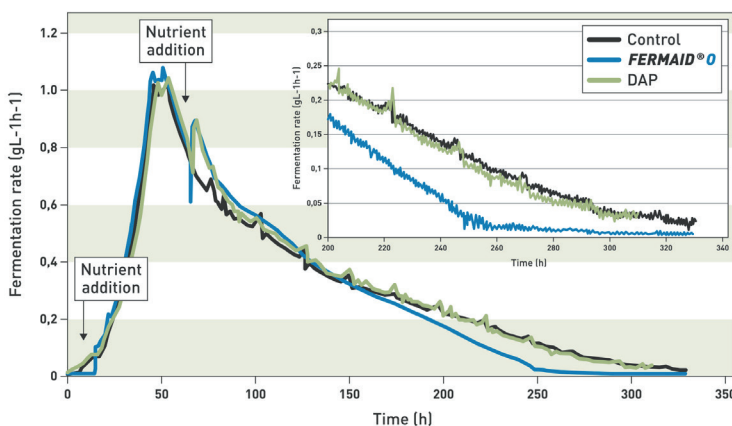
FERMAID O™ has the highest level of YAN (mg/g) permitted by the OIV monograph for yeast autolysates (OIV-OENO-496-2013).

FERMAID O™ is OMRI Listed. For market specific organic compliance, please contact your organic certifier.

Lallemand emphasises that YAN is not the only answer for smooth and complete alcoholic fermentations. Lipid content (from rehydration products), high quality YAN, vitamins and minerals are key factors that are provided by **FERMAID O™**.

FERMAID O™ supplies well-balanced nutrients for yeast:

- Highly bio- available amino acids and peptides. The speed and uptake of most amino acids is slower compared to NH_4^+ salts. It is postulated that these amino acids are stored within the cell and used later in fermentation, hence reducing the tailing off of fermentation rate at the end of fermentation.
- Micronutrients, naturally present in **FERMAID O™**, such as vitamins (thiamine, biotin, pantothenic acid) and minerals (magnesium and zinc) all contribute to cleaner and more reliable fermentations.
- Organic nitrogen has a tremendous impact on the organoleptic qualities of wine where it increases the expression of some aromatic fruity esters.
- High ammonium (DAP) concentrations inhibit the uptake of amino acids by inhibition of specific transport systems, reducing the influx of the valuable amino acids and potentially decreasing the entry of thiol precursors into the yeast cell. Hence for aromatic white varieties the use of **FERMAID O™** is highly desirable.



Addition of 16mg/L of YAN at 2 stages of fermentation (at the beginning and at 1/3rd of the alcoholic fermentation) in two forms: inorganic nitrogen (DAP) and organic nitrogen (Fermaid O™). This graph indicates, the greater efficacy of Fermaid O™ compared to DAP on a per milligram basis. A quicker finish to alcoholic fermentation is an attribute of using Fermaid O™.

PACKAGING AND STORAGE

- Available in 1kg, 2.5kg and 10kg foil bags.
- Store in a cool (below 25°C) and dry environment away from direct sunlight and strong odours.
- Shelf life at the recommended storage conditions is 4 years from date of production



KEY NOTES ON NUTRIENT DOSING FOR EFFICIENT ALCOHOLIC FERMENTATION

Initial YAN is an indicator of the nutritional composition of the must, but other factors need to be taken into consideration that also dictate the quantity of nutrient that is needed to ensure complete fermentation.

Factors affecting nitrogen utilization and requirements

- pH: Active transport systems are affected at low pH. High pH optimum for ammonium transport.
- Ethanol toxicity: Active transport process such as amino acid accumulation is inhibited in the presence of alcohol.
- Temperature: the rate of accumulation of amino acids is reduced at low temperatures.
- Plasma membrane composition: low sterols will reduce the efficiency of nitrogen transport.
- Yeast strain: different yeast strains have different nitrogen requirements and rates of assimilation; refer to the datasheet for the yeast to be used.
- Wild yeast: will provide competition for nitrogen sources.
- Yeast Dose rate: The use of DAP can lead to a yeast biomass higher than required, hence leading to a higher nitrogen demand than initially anticipated.

GUIDELINES FOR USE

Re-suspend Fermaid O™ in 10x its weight in water. Ensure it is well dispersed with no lumps, then add immediately to the tank.

Dosage rate of Fermaid O™ – Refer to table below.

A 20g/hL (1.7lb/1000gal) dose of Fermaid O™ will give 8.6mg/L of *actual* YAN (a YAN equivalent of 20mg/L). For Low YANs, Fermaid O™ is the recommended product. A 20g/hL (1.7lb/1000gal) dose of Fermaid O™ provides 24mg/L of actual YAN.

Juice/ Must* YAN	Yeast Rehydration	Start of Alcoholic Fermentation	1/3 rd through AF
>200 mg/L	Go-Ferm Protect Evolution™ 30 g/hL (2.4 lb/1000 U.S. gallons)	Fermaid O™ 10-20 g/hL (0.8-1.7 lb/1000 U.S. gallons)	Fermaid O™ 10-20 g/hL (0.8-1.7 lb/1000 U.S. gallons)
125-200 mg/L	Go-Ferm Protect Evolution™ 30 g/hL (2.4 lb/1000 U.S. gallons)	Fermaid O™ 10-20 g/hL (0.8-1.7 lb/1000 U.S. gallons)	Fermaid A™ 10-30 g/hL (0.8-2.4 lb/1000 U.S. gallons)
<125 mg/L	Go-Ferm Protect Evolution™ 30 g/hL (2.4 lb/1000 U.S. gallons)	Fermaid A™ 10-30 g/hL (0.8-2.4 lb/1000 U.S. gallons)	Fermaid A™ 10-30 g/hL** (0.8-2.4 lb/1000 U.S. gallons)

*Although the initial levels of YAN in the juice or must help guide the nutrient strategy, avoid chasing YAN numbers through excessive nitrogen additions. Instead, consider the quality of the nitrogen (inorganic vs. organic), the balance and availability of micronutrients, the relative nitrogen demand of the selected yeast, the temperature and aeration management, as well as other good fermentation practices – all of which greatly impact the overall yeast health and resulting fermentation.

**If the YAN level of the juice or must is below 70 mg/L, add 25 g/hL of diammonium phosphate (DAP) with 30 g/hL of FERMAID A™ around 1/3 through alcoholic fermentation.

Actual YAN versus 'YAN Equivalent' requires a special mention.

- **Actual YAN** is how much Yeast Assimilable Nitrogen is present in the product (mg/g) or present for a given dose of a product mg/L. A 20 g/hL (1.7lb/1000gal) dose of Fermaid®O provides 8.6 mg/L of YAN.
- In many trials it has been demonstrated that 'organic' YAN is approximately 2.5 times more efficient than inorganic YAN on a per mg basis. Given this, many suppliers quote a **YAN equivalent**. Hence a 20 g/hL (1.7lb/1000gal) dose of Fermaid O™ has a YAN equivalent (to inorganic) of 24 mg/L. This concept needs to be linked to a defined method of evaluation: using a MS70 synthetic medium with reference yeast and a 40 g/hL (3.4lb/1000gal) NH₄⁺ addition compared to various concentrations of the product to be evaluated and then measuring their effect on dCO₂/dt before it is a value / concept that can be used to compare products.

The information herein is true and accurate to the best of our knowledge; however, this data sheet is not to be considered as a guarantee, expressed or implied, or as a condition of sale of this product.