

Safe Alcoholic Fermentation: Providing Complete Nutrition for the Yeast

▶ Why?

- To protect yeasts when introducing them into must with high risk factors.
- Balanced nutrition promotes yeast growth and optimizes the sensory impact of fermentation.
- Simply providing ammonia nitrogen and thiamine is not always enough for successful fermentation.

Key Points

WHEN SHOULD THE YEASTS BE NOURISHED?


NITROGEN DEFICIENCY. Yeasts can develop and consume sugars only when they have a sufficient supply of nitrogen. Yeast available nitrogen (YAN) is made up of a combination of ammonia nitrogen and amino acids.


RISK OF SLUGGISH FERMENTATION. Yeasts also require vitamins and minerals that are often not available in the must. Adding complete nutrients to prevent deficiencies can provide the balance to avoid problems.


TO OPTIMIZE AROMATIC EXPRESSION. Nitrogen promotes the yeast’s aromatic metabolism.

HOW DO I ENSURE RELIABLE FERMENTATIONS?

Select the most appropriate yeast re-hydration product for the prevailing must/ferment conditions. (Go-Ferm Product)

 **GO-FERM®.** Recommended for non-stressful fermentation conditions

 **GO-FERM PROTECT®.** Recommended for use in challenging fermentation conditions such as low turbidity, high baume, high polyphenolic or botiytised must.

 **GO-FERM PROTECT EVOLUTION®.** Highest level of sterols in the Go-Ferm® range, enhanced fermentation security with yeast magnesium sources, vitamins and amino acids. Significantly improves yeast vitality and aroma precursor assimilation.

FERMAID® **FERMAID O™** providing free amino acids (organic nitrogen) and vitamins

FERMAID AT™ providing an enriched source of complex yeast nutrients blended with inorganic nitrogen, organic nitrogen and thiamine.

Yeast Protection and Nutrition Guidelines

KEY NOTES ON NUTRIENT DOSING FOR EFFICIENT ALCOHOLIC FERMENTATION

Juice/Must YAN	Yeast Rehydration	Start of AF	1/3 rd through AF	1/2 through AF
>200 mg/L	Go-Ferm® Protect Evolution 30g/hL		Fermaid®O 20g/hL	
125-200 mg/L	Go-Ferm® Protect Evolution 30g/hL	Fermaid®O 20g/hL	Fermaid®AT 20g/hL	
70 - 125 mg/L	Go-Ferm® Protect Evolution 30g/hL	Fermaid®O 40g/hL	Fermaid®AT 20g/hL	
<70 mg/L	Go-Ferm® Protect Evolution 30g/hL	Fermaid®AT 30g/hL	Fermaid®AT 30g/hL	Nutrient Vit End 30g/hL

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.

Go-Ferm Protect Evolution™ optimises the aromatic potential and secures fermentation by:

- Increasing yeast vitality and viability due to ergosterols and yeast vitamin sources
- Increasing the alcohol tolerance of yeast by the fortification of the membrane with a high level of quality sterols and polyunsaturated fatty acids
- Thanks to high sterol concentrations and the improvement in bioavailability to the yeast membrane, Go-Ferm Protect Evolution™ improves yeast aroma precursor assimilation, allowing better aromatic compound release
- Significant impact on fermentation kinetics especially under challenging conditions
- Allows fermentation kinetics to be similar as when oxygen is added. Go-Ferm Protect Evolution™ can preplace O₂ additions in white and rosé winemaking protocols.

Sluggish fermentation?

Add Nutrient VIT END™ when there is a slowdown around 2/3 through AF of less than 0,5 Baume or 1°Brix/day, except for slow fermenting yeasts or fermenting <12°C.