



METHOD TO RESTART STUCK FERMENTATION

CAUSES OF STUCK FERMENTATIONS

The principal causes of stuck fermentations are:

- Nutrient deficiency (nitrogen and vitamins)
- Oxygen deficiency (necessary for synthesis of sterols)
- Deficiency of survival factors (alcohol, medium chain fatty acids, acetic acid)
- Uncontrolled temperature increase
- Presence of residual pesticides (especially in the case of dry summers)
- Incorrect yeast strain (little resistance to alcohol).

CONSEQUENCES

Sluggish or stuck fermentation kinetics involves two types of problems:

1. **Quality problems:** in a must or wine which is rich in sugar and poor in SO_2 , indigenous strains of malolactic bacteria can develop and they can degrade the residual sugars while producing elevated levels of lactic and acetic acids;
2. **Economic problems:** stuck fermentation can only causes a delay in production, but necessitates the use of extraordinary practices and procedures which result in increases in costs.

For these reasons, it is preferable to act proactively and prevent the problem rather than be forced to cure it.

METHOD TO RE-START STUCK FERMENTATIONS

Pre-treatment of the stuck wine

In the case of a stuck fermentation, before re-inoculation, the following pre-treatment steps are recommended:

1. Timely intervention to prevent the development of undesired bacteria by use of the following:
 - Filtration or racking
 - Sulphur dioxide addition to a maximum of 1 g/hL (10ppm)
 - Add 30-40 g/hL of **ENARTIS ZYM LYSO** if there is a risk of malolactic fermentation onset.
2. Add 10-20 g/hL **NUTRIFERM CONTROL** with 5 g/hL of bentonite, **BENTOLIT SUPER**. Yeast hulls will eliminate medium-chain fatty acids and pesticide residues which may act as fermentation inhibitors while **BENTOLIT SUPER** will help the settling of lees.
3. Allow **NUTRIFERM CONTROL** and **BENTOLIT SUPER** to act for 24 hours, and then remove by racking or filtration without worrying about clarity. After this, inoculate with a yeast starter prepared as follows.

Rehydration of active dry yeast

1. Calculate the amount of yeast **ENARTIS FERM EZ FERM 44** required for the total volume of stuck wine at 25-40 g/hL .
2. Rehydrate this amount of yeast in ten times its weight in clean water at 35-38°C.
4. Allow 20 minutes to rehydrate then continue with preparation of the starter.

Preparation of the starter

The nutrient content of the stuck fermentation will be low and unable to support adequate yeast growth. In addition, the culture will require adaptation to the alcohol content of wine.

1. Prepare an initial mixture made of 50% stuck wine and 50% water. This solution must be 5% of the total volume of stuck wine.
2. Calculate the amount of **NUTRIFERM ENERGY** required for the total volume of stuck wine at 10-15 g/hL and add to the water/wine mixture.
3. Adjust the sugar content of the wine/water mixture up to 50 g/L (5° Brix) by adding concentrate, juice or sugar.

Start of fermentation and addition of the stuck wine

1. Add the rehydrated yeast to the wine/water mix and maintain the temperature at 21-24°C. Note: Avoid cold shock! The temperature difference between the yeast suspension and the wine/water solution must be less than 10°C.
2. Monitor the sugar level of the starter. Attention: never let the sugar drop to zero.
3. When the sugar level has dropped by half (<2.5°Brix), add 20% of stuck wine to the starter. Also add the amount of **NUTRIFERM ADVANCE** required for 20% of stuck wine at 25 g/hL.
4. When the sugar has dropped by half, add another batch of 20% of the total stuck wine volume.
5. Repeat step 4 three more times. At every step check that the temperature difference between the starter and stuck wine is lower than 10°C.

EXAMPLE FOR 10,000 L (100hL)

1. Prepare the initial mixture with:
 - 250 L of stuck wine
 - 250 L of water
 - 1 kg Nutriferm Energy
 - Sugar or juice concentrates in order to adjust the sugar level of this mixture to 50 g/L (5°Brix)
2. Rehydrate 4 kg of yeast Enartis **ENARTIS FERM EZ FERM 44** in 40 L of clean water at 35-38°C .
3. Wait 15 minutes. Stir and then add the yeast suspension to the initial mixture. Note: Avoid cold shock!
4. Monitor the sugar content of the starter. When the sugar has dropped by half, add:
 - 20 hL of stuck wine
 - 500 g of **NUTRIFERM ADVANCE**
5. When the sugar has dropped by half, add another 20 hL of stuck wine.
6. Repeat Step 5 three more times.