

A good preparation of a Prise de Mousse is multifactorial. The composition of the base wine is essential, but many other parameters will have an impact. All parameters are interdependents. If there are several limiting factors, then this will increase the risk of failure. The following key parameter values are given as recommendations. If only one parameter shows a value above the recommended values, then it is strongly recommended to carefully follow the starter protocol and to avoid ANY other limiting parameters.

## KEY PARAMETERS



### ALCOHOL

During the Prise de Mousse, the alcoholic percentage will increase 1.3 to 1.5%Vol. So, it is recommended to have a base wine %Vol. around 11 to 11.5%Vol.

### FREE SO<sub>2</sub>

SO<sub>2</sub> strongly impacts yeast activity. The recommended concentration is 10 ppm, maximum 15 ppm.

### pH

Base wine pH is usually between 3.0 and 3.2. With techniques like electrodialysis, the pH can often be below 3.0. It is important to not have a pH below 2.9. Below this value, yeast activity is negatively impacted. These naturally difficult pH conditions can also occur in cool climate areas. There is an interplay between pH and molecular SO<sub>2</sub>; a low pH means a high active SO<sub>2</sub>.

### DISSOLVED CO<sub>2</sub>

Historically, base wines were often aerated before Prise de Mousse. We now understand the significance of this step; it is not for adding oxygen to the Prise de Mousse but rather to remove CO<sub>2</sub>. We estimate that 0.4 g/L of dissolved CO<sub>2</sub> can inhibit yeast activity by 40%.

## Prise de Mousse in bottles



### TEMPERATURE

Temperature is the only non-wine composition parameter, but it is no less important. The minimum temperature in the tirage warehouse for good Prise de Mousse in bottles is 11°C at ground level.

The ideal temperature is 15°C. It helps with the survival conditions of the yeast (toward active SO<sub>2</sub>, assimilation of toxins and better viability).

Temperature must not exceed 18°C. Above this temperature, there can be higher biomass production which can result in riddling and disgorging issues.

When preparing the tirage mixture (blend of base wine, starter culture and adjuvant), ensure that the temperature difference between the starter culture and the base wine is less than 10°C.

The bottles storage temperature should not be ignored as this temperature could impact on the success of Prise de Mousse.

When Tirage is finished, bottles MUST be stored horizontally to maximize the surface area of the yeast to the wine and thus to the sugar for a complete alcoholic fermentation.

# HOW TO ACHIEVE A SUCCESSFUL PRISE DE MOUSSE

## Prise de Mousse in bottles



### TARTARIC STABILIZATION

Tartaric stabilization must be perfect prior to Tirage.

Bubbles, hungry for oxygen, are made from nucleation sites which have trapped oxygen in a hollow fiber. Tartrate crystals are a multitude of nucleation sites. When opening a bottle, an impressive gushing phenomenon can occur.

Several tartaric stabilization techniques exist (e.g. cold stabilization or electro dialysis), but they are not always possible and/or costly. Carboxymethylcellulose (CMC or cellulose gum) is a good alternative only when the base wine is COMPLETELY protein stable ; a heat test of the treated wine is strongly recommended prior to addition of CMC.

### PROTEIN STABILITY

This debate on sparkling wines is still on going. Everything is a matter of balance ! In Champagne produced in France, base wines are naturally protein stable.

Proteins may contribute to the bubble finesse, but conversely could make a haze in bottle by flocculation when their concentration is too high.

IOC's recommendation is to use a suitable bentonite to remove proteins from base wine to avoid issues such as haze or gushing.

### FINING / FILTRATION

These processes must be done carefully prior to Tirage to help with the riddling stage and avoid potential issues.

In the case of base wine without complete MLF, sterile filtration is imperative.

## Prise de Mousse in pressure tank



If the base wine is not protein and/or tartaric stable, it is still possible to stabilize the wine in the pressure tank.

It is preferable to make these stabilization operations prior to Prise de Mousse to have the flexibility to mature the sparkling wine on lees longer.

### TEMPERATURE

The choice of temperature is determined according to the desired wine profile and the urgency of availability of the sparkling wine.

For immediate needs, it is recommended to increase the temperature to around 20°C to boost the AF kinetics. At high temperatures, the fermentation is faster and produces extra biomass that can be easily eliminated by filtration prior final bottling.

### INOCULATION RATE

For a fast fermentation, you could increase the inoculation rate of the starter culture by 10%.

# HOW TO ACHIEVE A SUCCESSFUL PRISE DE MOUSSE

## HOW TO MAKE A STARTER



The aim is to gradually adapt the yeasts to the difficult conditions they will encounter in the base wine (alcohol, pH, SO<sub>2</sub>, temperature...).

The preparation of the starter culture is a key step in the success of the Prise de Mousse. The yeast choice is also essential.

IOC produces a range of dedicated yeast strains for sparkling wines production according to the method used and the desired wine profile.

- **IOC 18-2007**: reference yeast for sparkling wine production, selected from the best Champagne vineyards.
- **IOC DIVINE**: yeast with fast autolysis
- **IOC FIZZ**: Specific yeast for Charmat, traditional style.
- **IOC FIZZ +**: Specific yeast for Charmat with fruity notes.
- **IOC BIO**: Certified organic yeast for sparkling wine production.

The preparation of a starter has three essential stages :

### Stage #1 : Protection and rehydration of yeasts

We recommend **HYDRA PC** – yeast protector, naturally rich in magnesium. This addition of sterols reinforces the yeast membrane and helps intra-cells exchanges. It gives more strength to the yeasts and a better ability to resist to difficult conditions (pressure) at the end of AF. Magnesium provided by **HYDRA PC** helps yeast growth and improves their activity under pressure.

### Stage #2 : Starter culture ; yeast acclimatization to alcohol

**Duration : 12 to 24 hours.**

During this stage, the yeast metabolise sugar and gently adapt, thanks to a gradual increase of alcohol content. At this stage, we recommend the addition of **PHOSPHATES TITRÉS** – nitrogen nutrition to optimize the fermentation and increase biomass production in the next stage.

### Stage #3 : Multiplication (production of biomass)

Taking about 3 days (according to temperature conditions), it allows the starter to multiply in order to achieve, at the Tirage stage, an active fermentative culture and with a high cell concentration. To maintain a good activity and increase effectiveness of the biomass, it is strongly recommended to add a second dose of **PHOSPHATES TITRÉS**.

**It is essential to follow recommendations in terms of temperature and aeration for a good starter culture.**

**Optimum population of yeast cells is 50 to 70 Million cells/mL**

After choosing your sparkling method, preparing the base wine, then the starter, it is now the time to inoculate the Prise de Mousse.

# HOW TO ACHIEVE A SUCCESSFUL PRISE DE MOUSSE

## TRADITIONAL METHOD



### PRODUCTS SELECTION :

- **IOC 18-2007** : The Worldwide reference strain for Traditional method
- **IOC DIVINE** : Yeast with fast autolysis activity

### **Don't forget your adjuvants !**

- **CLARIFIANT XL** : Liquid mix of sodic bentonite and silicates, ready to use.
- **SOLUTION ST** : Complex solution of tannins and copper sulfate
- Sugar or rectified concentrate (24g/L to achieve 6 bars of pressure in the bottle)

Please prepare these products according to the recommendations given in the data sheets and mix with the base wine to create the TIRAGE MIXTION

Be sure that all components are in suspension before bottling by continually stirring this Tirage Mixtion.

### TO BRING OUT YOUR DIFFERENCE

#### CROWN CAPS

They are now considered an important practice in the sparkling wine world. It has a strong impact on the maturation on lees. The choice of the crown cap permeability is linked to the cuvee composition and its expected time on lees.

#### EXPEDITION LIQUEUR

The work on the expedition liqueur is not only the sugar dosage and SO<sub>2</sub> adjustment. To improve the cuvee or to adjust it or to adapt to market needs, many solutions exist but need to be tested on the tasting bench.

#### JETTING TECHNIQUE

It is a tool to be used at the disgorging stage to control the input of oxygen in open bottles. It guarantees a much better homogeneity of a disgorged batch of bottles.

#### TROUBLE SHOOTING RIDDLING

To solve riddling issues, IOC is equipped with tools to simulate and optimize the riddling stage: the "mini gyropalette" or the REMULAB (equipped with a video recorder that allows IOC to identify the origin of a bad riddling program and to adjust it).

# HOW TO ACHIEVE A SUCCESSFUL PRISE DE MOUSSE

## PRESSURE TANK METHOD



Take the time to determine the desired profile of the wine that you want to produce. From this targeted profile, you can select yeast, tannins, yeast inoculation rate, temperature, etc... to achieve this goal.

### PRODUCTS SELECTION :

- **IOC FIZZ** : Specific yeast for Charmat method
- **IOC FIZZ+** : Specific yeast for Charmat with fruity notes;
- **EXTRA PM** : Yeast nutrient which guarantees an optimal yeast activity during Prise de Mousse with Pressure tank Method. Tool for yeast nutrition and flavour preservation (regulation of oxidation or reduction). It also contributes to the roundness and persistency of the wine.
- **INOSTAB** : Carboxymethylcellulose (CMC) for tartaric stabilization.
- Fine tuning products : Sugar or concentrate

There are many choices to adjust the wine profile and adapt to the specific market :

For fresher wines : **MANN BOUQUET B19** or **ESSENTIAL PASSION** for sparkling rosés

For full bodied wines : **SOLUTION ST**, increase the structure and reduces reductive characters.

Be sure of adequate mixing during Prise de Mousse to allow yeast to access all available sugars

### LET'S BRING OUT YOUR DIFFERENCE

Don't forget the work that can be done on the liqueur Expedition which gives your final touch: "Goût Maison".

