Viniflora® FrootZen™ is a direct inoculation yeast product based on a selected strain of *Pichia kluyveri*, isolated from a spontaneously fermenting Chardonnay must by Auckland University (New Zealand), and then developed as a frozen specialty yeast product ready for direct inoculation by Chr. Hansen.

This document is intended to be used in the winery when using FrootZen™, to secure its optimal performance. To get more information about the product content and its oenological characteristics please consult the Product Information Sheet.

Viniflora® FrootZen™ is meant to be used in a **sequential inoculation**, meaning that alcoholic fermentation is initiated with FrootZen™, and then completed by a classical *Saccharomyces cerevisiae* inoculation. This sequence emulates what happens in natural ‘wild ferments’, where grape juice is initially fermented by non-*Saccharomyces* species before being superseded by *Saccharomyces cerevisiae*, able to rapidly convert sugars into a high concentration of alcohol.

**Part 1: Handling of Viniflora® FrootZen™**

Viniflora® FrootZen™ is very different from standard Active Dry Yeasts (ADY). The product is frozen and stored at -45°C (-49°F) and does not require re-hydration or activation before inoculation into grape juice/must as it is already hydrated and adapted to survive in grape juice. This convenient feature is called ‘direct inoculation’ and frees up time for winemakers at a critical time by removing re-hydration and acclimatization steps.

To succeed with Viniflora® FrootZen™ the following inoculation protocol has been developed:

1. **Check the grape juice/must parameters are compatible with FrootZen™:**
   - Total SO₂ ≤ 45 ppm
   - Temperature range 10-20°C (50-68°F) ideally 16-20°C (61-68°F)

2. **Wear gloves as the product is deeply frozen**

3. **Take one box of Viniflora® FrootZen™ out of the -45°C (-49°F) freezer - see Fig. I**

4. **Remove the bag from the box and the cap protecting the bag - see Fig. II**

5. **To ease handling, by thawing the product slightly, add the bag to a bucket of water at 10 - 20°C (68°F) for 10 minutes, before removing**

6. **Cut open the bag with a pair of scissors (or a cutter) following the dotted lines as shown on Fig. III**

7. **Throw the contents of the bag into a 100 hl tank (10000 liters; 2642 US Gall.) - see Fig. IV**

8. **Once FrootZen™ has melted into the juice, mix tank to help disperse.**

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If the tank size does not fit with the recommended dosage, you can thaw 1 brick / 1 kg of FrootZen™ into a clean bucket containing 4 litres grape juice. Make sure the sulfite dosage of the grape juice is below 30 ppm (or mg/L) to ensure a good fermentation start. Then use the 5 litres solution to inoculate vessels, e.g. 2 tanks of 50 hl each or 40 barrels of nearly 2.5 hl, for instance.

Fig. I - Box of Viniflora® FrootZen™

Fig. II - Bag of Viniflora® FrootZen™ in its box, topped with its cap (to remove before use)
Fig. III - After 10 minutes in a bucket of cold tap water, cut open the bag following the dotted lines

Fig. IV - Pour the content of a bag in a tank… and let the yeast initiate the fermentation
Part 2: Sequential inoculation with Viniflora® FrootZen™, follow up and key steps.

After inoculation into the grape juice, fermentation will start within a few hours delivering two tangible signs: CO₂ release and production of intense fruity/floral aromas. The conversion of sugars into ethanol is slow compared to standard wine yeasts, hence the kinetics are not comparable with traditional Saccharomyces cerevisiae. Average consumption of sugars is less than 1 °Brix per day or 4 points in specific gravity (density) at 16-20°C (61-68 °F).

After 48 hours, winemaker’s standard Saccharomyces cerevisiae of choice can be inoculated. The maximum waiting time between the two inoculations should be no more than 72 hours or 3 days. When adding the Saccharomyces, please follow the recommended dosage, the re-hydration guidelines and the nutritional indications delivered by the yeast manufacturer; always check the YAN (Yeast Available Nitrogen) before inoculating a Saccharomyces cerevisiae.

Please also note that in some circumstances a film can be observed on top of the must a few hours after the FrootZen™ inoculation - this is not unusual and will dissipate after the Saccharomyces inoculation.

To follow the alcoholic and the malolactic fermentation use our monitoring tools available on our web site: www.chr-hansen.com/wine