SCOTT LABORATORIES

2220 Pine View Way • P.O. Box 4559 • Petaluma, CA • 94955-4559

# Fordras Lysozyme

Lysozyme is a naturally occurring enzyme isolated from egg whites. It is used in wine to inhibit lactic acid bacteria. Lysozyme degrades the cell wall of gram-positive bacteria such as *Oenococcus*, *Pediococcus*, and *Lactobacillus*. Due to their protective external membranes, Lysozyme is not effective against gram-negative bacteria like *Acetobacter*. It also has no activity against yeast.

Lysozyme's effectiveness depends not only on the type of bacteria, but also the number of cells present. Unlike $SO_2$, Lysozyme is more effective at higher pH's when lactic acid bacteria growth is favored.

Lysozyme does not replace $SO_2$ because it has no anti-oxidative effect. It can, however, be used to help greatly reduce the amount of $SO_2$ needed to achieve microbial stability over the life of both red and white wines.

## Lysozyme can be used in the following applications:

| Lysozyme Applications | Reds | Whites | Recommended Dosage | | | | | Timing of Addition |
|---|---|---|---|---|---|---|---|---|
| | | | Powdered Lysozyme | | | 22% Lysozyme Solution | | |
| Protection During Stuck and Sluggish Fermentations<br>To encourage yeast growth in the absence of $SO_2$ while reducing the risk of VA production by lactic acid bacteria. | • | • | 250-400 ppm | 25-40 g/hL | 0.94-1.50 g/gal | 114 - 182mL/hL | 4.3 - 6.8 mL/gal | Add at first signs of a stuck fermentation |
| Prevent Growth of LAB in Must and Juice<br>To inhibit spoilage characters due to uncontrolled microbial growth. This is especially important in high pH conditions or with grapes containing rot. | • | • | 200 ppm | 20 g/hL | 0.75 g/gal | 91.0 mL/hL | 3.4 mL/gal | Add prior to fermentation |
| Delay MLF/Post-MLF Stabilization<br>To protect wine without the negative effects of $SO_2$, to allow for maceration or aging, to allow for implantation of selected ML bacteria, or to increase efficiency of Phase I micro-oxygenation. *Delay* | • | | 100-200 ppm | 10-20 g/hL | 0.38-0.75 g/gal | 46 - 91 mL/hL | 1.7 - 3.4 mL/gal | Add at juice stage or immediately after alcoholic fermentation |
| *Stabilize* | • | | 250-500 ppm | 25-50 g/hL | 0.94-1.90 g/gal | 114 - 228 mL/hL | 4.3 - 8.6 mL/gal | Add immediately after MLF Completion |
| Inhibit MLF when Blending Partial and Complete ML Wines | • | • | 300-500 ppm | 30-50 g/hL | 1.10-1.90 g/gal | 136 - 227 mL/hL | 5.0 - 8.6 mL/gal | Add during blending |

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# *Directions for Lab Scale Additions of Lysozyme*

Prepare a 5% solution of Lysozyme by dissolving 5.0 grams of Lysozyme in 80 ml of cool or lukewarm water. When dissolved, bring volume up to 100 mL with DI water. Be sure to mix gently! Lysozyme is fragile and easily denatured by vigorous mixing or hot water. When dissolved, the Lysozyme solution will be a completely clear liquid.

*For a 375ml Bottle:*

| PPM Lysozyme | Milliliters of 5% Lysozyme Solution to Add |
|---|---|
| 50 | 0.37 |
| 100 | 0.74 |
| 150 | 1.11 |
| 200 | 1.48 |
| 250 | 1.85 |
| 300 | 2.22 |
| 400 | 2.96 |
| 500 | 3.70 |

## Lysozyme Rehydration Procedures

1. Weigh-out the quantity of Lysozyme to be added.

2. Add this quantity of Lysozyme to approximately 5 times its weight in tepid (warm) water.
   - 1 kg Lysozyme to approx. 1.5 gal or approx. 5.7 L water
   - 1 lb Lysozyme to approx. 0.75 gal or approx. 2.8 L water

3. Stir this mixture **gently** for about 1 minute. Avoid foaming!

4. Allow this mixture to 'soak-up' for at least 45 minutes.

5. Repeat steps three and four until the solution has completely dissolved into a clear, colorless liquid.



FORDRAS

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