

## LYSO-Easy

*Lactic Acid Bacteria Inhibitor – Ready-To-Use Lysozyme Solution*

LYSO-easy is a liquid solution of Lysozyme, ready to use. It has exactly the same application characteristics as powdered Lysozyme. 4 mL of Lyso-easy solution equals 1 gram of Lysozyme powder.

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<sub>2</sub>, Lysozyme is more effective at higher pH's when lactic acid bacteria growth is favored.

Lysozyme does not replace SO<sub>2</sub> because it has no anti-oxidative effect. It can, however, be used to help greatly reduce the amount of SO<sub>2</sub> 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		
			ppm	g/hL	g/gal	mL/hL	mL/gal	
<b>Protection During Stuck and Sluggish Fermentations</b>  To encourage yeast growth in the absence of SO <sub>2</sub> while reducing the risk of VA production by lactic acid bacteria.	•	•	250-400	25-40	0.94-1.50	114 - 182	4.3 - 6.8	Add at first signs of a stuck fermentation
<b>Prevent Growth of LAB in Must and Juice</b>  To inhibit spoilage characters due to uncontrolled microbial growth. This is especially important in high pH conditions or with grapes containing rot.	•	•	200	20	0.75	91.0	3.4	Add prior to fermentation
<b>Delay MLF/Post-MLF Stabilization</b>  To protect wine without the negative effects of SO <sub>2</sub> , to allow for maceration or aging, to allow for implantation of selected ML bacteria, or to increase efficiency of Phase I micro-oxygenation.	<i>Delay</i>	•	100-200	10-20	0.38-0.75	46 - 91	1.7 - 3.4	Add at juice stage or immediately after alcoholic fermentation
	<i>Stabilize</i>	•	250-500	25-50	0.94-1.90	114 - 228	4.3 - 8.6	Add immediately after MLF Completion
<b>Inhibit MLF when Blending Partial and Complete ML Wines</b>	•	•	300-500	30-50	1.10-1.90	136 - 227	5.0 - 8.6	Add during blending

## ***Directions for Lab Scale Additions of LYSO-Easy***

Prepare a 10% solution of LYSO-Easy by dissolving 10.0 ml of LYSO-Easy 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.

*For a 375ml Bottle:*

<u>PPM Lysozyme</u>	<u>Milliliters of 10% LYSO-Easy Solution to Add</u>
100	1.73
150	2.56
200	3.41
250	4.28
300	5.10
400	6.83
500	8.55

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