ENARTIS NEWS

ATTENTION: REMEMBER TO PROTECT YOUR WINE FROM BAD BUGS!

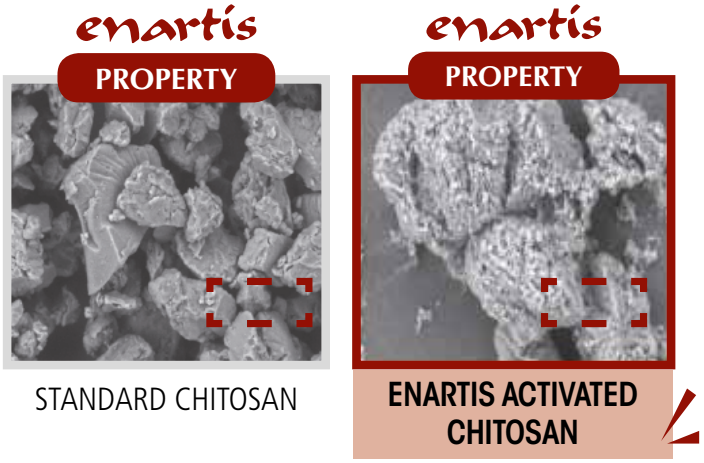
After all is pressed and fermented and the craziness of harvest starts to become a distant memory - be aware that spoilage microbes are ever present! Even with SO_2 and low temperatures, the risk of unwanted malolactic fermentation, appearance of uncharacteristic aromas or increased volatile acidity are always lurking in the cellar. How can you stop the proliferation of these contaminants?

ACTIVATED CHITOSAN: THE REVOLUTION IN MICROBIOLOGICAL STABILISATION

Chitosan has been approved for oenological use due to its ability to eliminate *Brettanomyces*. This substance is widely used in both the food and pharmaceutical industry for its antimicrobial action. So, why would it only be effective in eliminating *Brettanomyces*? And, if chitosan acts on contact by attracting microorganisms due to its positive charges, would its antimicrobial effectivity increase if we amplified the charge? These questions have pushed Enartis to work on the chitosan production process and explore its effectiveness against other wine spoilage microorganisms.

The result of this work was the development of a specialised "activation" process that increases chitosan's positive surface charge. The activated chitosan has a faster action in controlling *Brettanomyces* than standard chitosan products, but more importantly, it is proven to be very effective in eliminating other spoilage microorganisms such as *Acetobacter*, *Pediococcus*, *Lactobacillus*, *Zygosaccharomyces* and *Schizosaccharomyces*. This discovery is a real revolution for the wine industry now that we have an alternative antimicrobial product that is more effective and healthier than sulphur dioxide.

ACTIVATED CHITOSAN HAS A WIDER SURFACE FOR INTERACTING WITH MICROORGANISMS



STANDARD CHITOSAN

ENARTIS ACTIVATED CHITOSAN

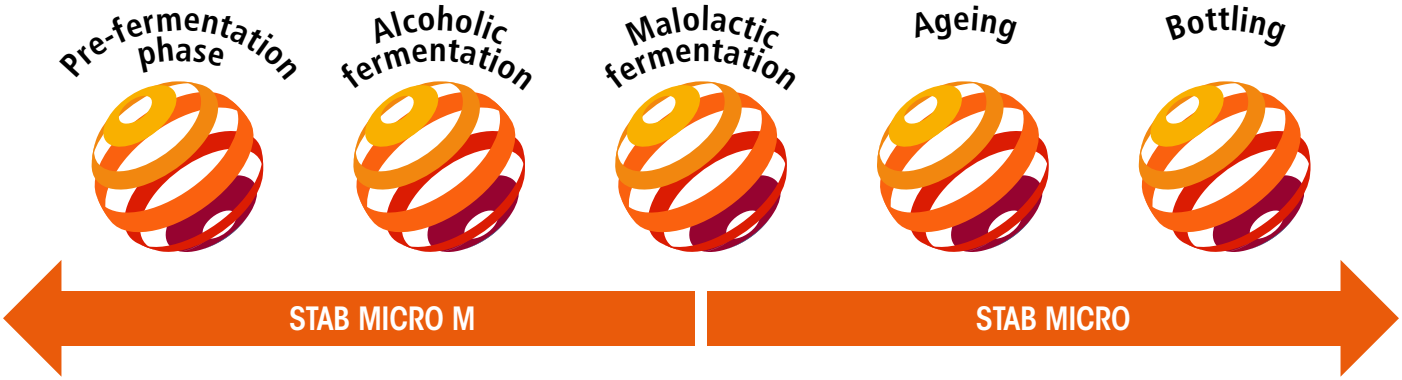
	Micro-organisms	ENARTIS - ACTIVATED ENARTIS
Bacteria	*Acerobacter aceti*	XXX
	Pediococcus damnosus	XXX
	Oenococcus oeni	XXX
	Lactobacillus	XX
Yeast	*Brettanomyces dekkera*	XXX
	Zygosaccharomyces bailii	XX
	Schizosaccharomyces pombe	XX
	Torulaspora delbruckii	-
	Saccharomyces cerevisiae	-

XXX very effective XX effective - no effect

ENARTIS STAB MICRO AND ENARTIS STAB MICRO M: WIDE SPECTRUM ANTIMICROBIAL

For the microbiological control of wines, Enartis offers two products based on activated chitosan: Enartis Stab Micro M is a fining agent containing activated chitosan and yeast hulls rich in chitin-glucan. It was developed for the treatment of turbid musts and wines, where the presence of solids limits the antimicrobial effect of pure chitosan.

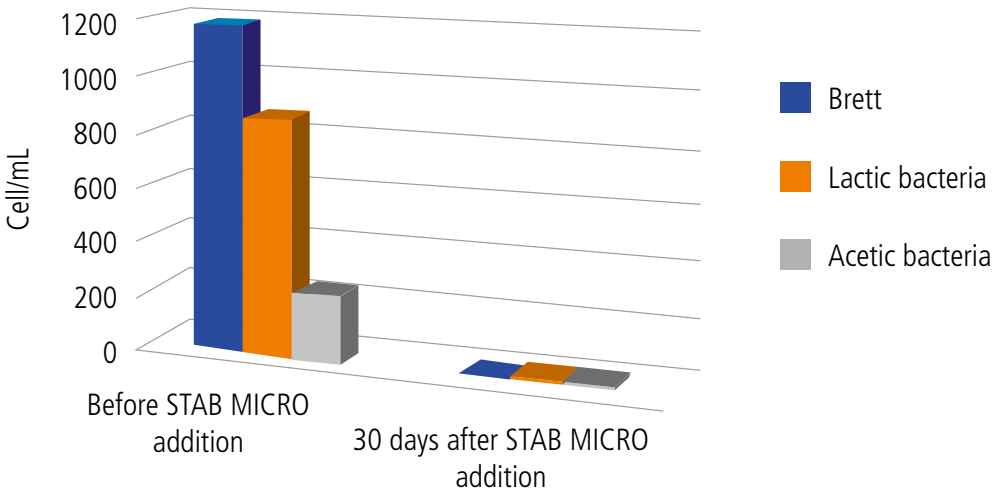
Enartis Stab Micro, a pure activated chitosan, is recommended for the microbiological control during wine ageing.



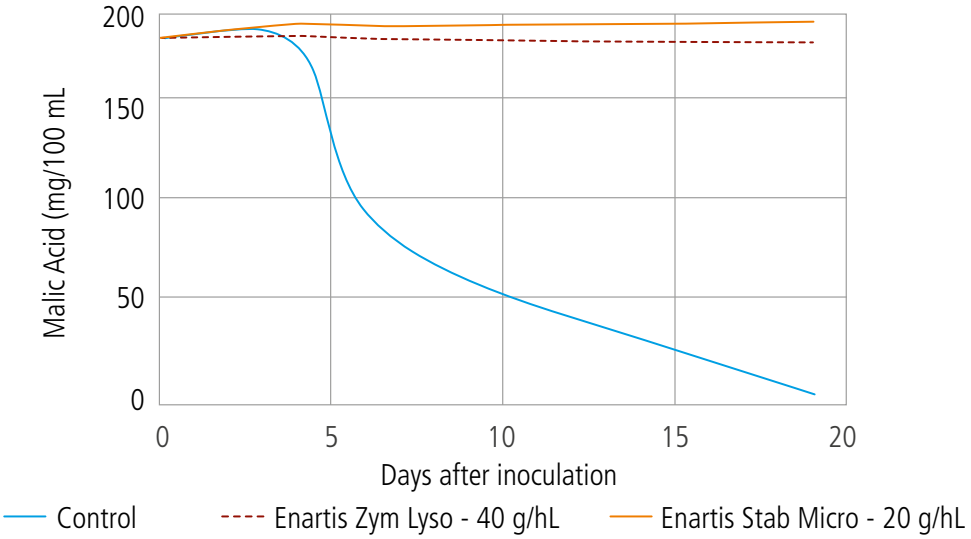
There are many applications for Enartis Stab Micro and Enartis Stab Micro M during this time of the year, such as:

Prevention of spoilage microorganisms during maturation in oak: 3-5g/hL of Enartis Stab Micro added to the wine during the transfer in barrels, limits the growth of non-*Saccharomyces* and bacteria that can affect wine quality and health (volatile phenols, volatile acidity, biogenic amines, etc.).

ENARTIS STAB MICRO
PREVENTS CONTAMINANT GROWTH DURING WINE AGEING
(red wine added with 5 g/hL of Enartis Stab Micro before transfer to barrel)



ENARTIS STAB MICRM M CAN BE USED AS VEGAN FRIENDLY AND ALLERGEN FREE ALTERNATIVE TO LYSOZYME FOR PREVENTING MALOLACTIC FERMENTATION ONSET



Production of wines with low content of sulphur dioxide: 3-5g/hL Enartis Stab Micro ensures the same antimicrobial protection as sulphur dioxide.

Prevention of malolactic fermentation: where it is needed to prevent the onset of malolactic fermentation in rosé wine, white wine, base wine for sparkling - a treatment with 8-10g/hL of Enartis Stab Micro M reduces the bacterial population below the risk threshold.

Reduction of spoilage microorganism in base wine for sparkling: the addition of 5-8 g of Enartis Stab Micro M per hectolitre of base wine before the tirage will prevent the onset of malolactic fermentation and the appearance of off-flavour caused by microorganisms such as *Zygosaccharomyces* and acetic bacteria contaminating the concentrated juice used for sugar addition.