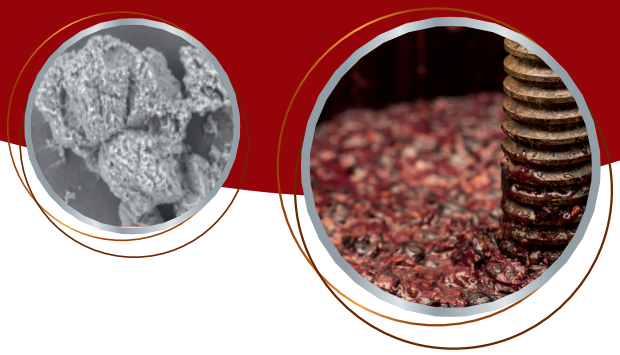


ENARTIS NEWS

MULTIPLE APPLICATIONS AND BENEFITS FROM USING ENARTIS ACTIVATED CHITOSAN DURING HARVEST

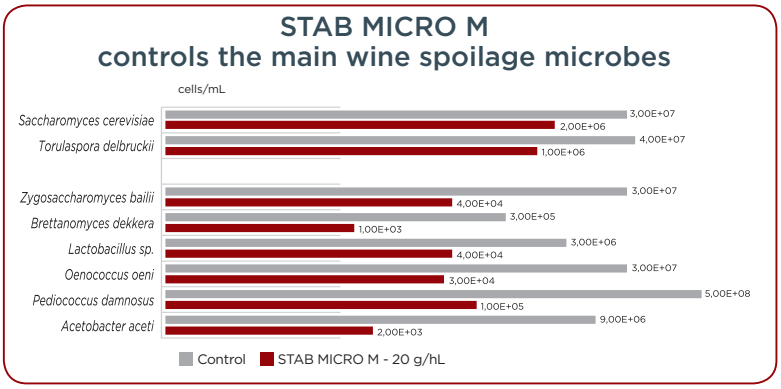
CHITOSAN ANTIMICROBIAL MECHANISM

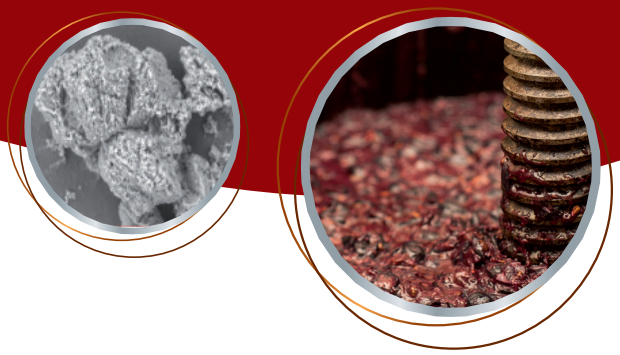
Produced from the partial deacetylation of chitin produced by *Aspergillus niger,* chitosan is a cationic polysaccharide that interacts with a wide spectrum of microorganisms. Its antimicrobial activity is attributed to its positively-charged ($NH3^+$ groups) surface that interferes with negatively-charged residues on the microorganism's cell membrane surface and thereby alters their membrane wall permeability resulting in cell death.

Enartis developed a pre-activation process during production resulting in a significant increase of the molecular charge and contact surface of chitosan, improving its capability of inhibiting microorganism growth.

ENARTIS STAB MICRO M APPLICATIONS DURING HARVEST

Enartis Stab Micro M is a vegan-friendly and allergen-free formulation developed for the treatment of turbid musts and wines. It can control the development of numerous contaminants such as *Acetobacter, Pediococcus, Lactobacillus, Oenococcus, Brettanomyces, Zygosaccharomyces, Botrytis* etc.





In the initial stages of vinification, Enartis Stab Micro M has many unique applications.

Prevents VA production

Enartis Stab Micro M can be used on grapes during crushing, in the juice pan, or in must, to reduce wild yeasts and bacteria, in particular *Acetobacter*, thus limiting VA production during the first stage of the winemaking process.

Microbial management for high pH juice

In high pH juice, SO_2 has a very little antimicrobial activity. Chitosan is a strong antimicrobial, effective against a broad spectrum of microorganisms, even at higher pH.

Reduce laccase activity

Stab Micro M is effective in blocking *Botrytis* infection, inactivating its spores and limiting laccase activity. This reduces browning and preserves more aromatics and color intensity.

Promote quality, natural fermentation

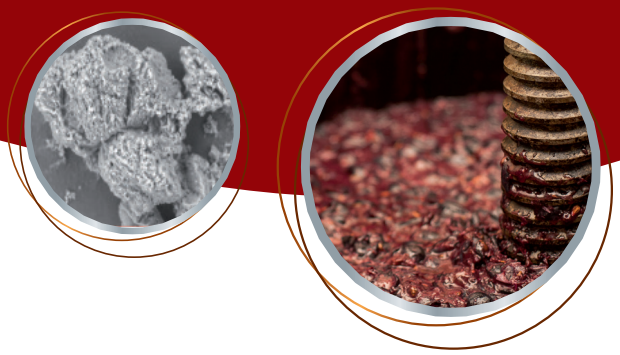
Natural fermentation can be used to produce unique wines thanks to the contribution of wild yeast strains naturally present on the grapes or in the cellar; nevertheless, this practice is not without risk. The dominance of yeast with poor oenological attributes can lead to stuck fermentation or production of faulty wines. Taking advantage of *Saccharomyces cerevisiae* and *Torulaspora*'s low sensitivity to chitosan, Enartis Stab Micro M can be added to the must to help the dominance of the best fermenting yeast over non-*Saccharomyces* yeast and bacteria, and increase the chances of a clean, regular and complete fermentation.

Help selected yeast dominate over wild flora and limit stuck fermentation

By reducing microbial competition and promoting the dominance of the inoculated yeast, Enartis Stab Micro M on grapes and juice improves fermentation kinetics and cleanliness.

Reduce or eliminate the use of SO_2

Enartis Stab Micro M can partially or totally replace sulfur dioxide addition. In fact, besides its antimicrobial activity, chitosan performs its own antioxidant action. It has the capability of reducing browning, pinking, loss of aromatics and preventing the increase of acetaldehyde, thanks to its capability of chelating copper and iron that activate the oxidative process.



Treat sluggish and stuck fermentation

In the case of sluggish or stuck fermentation, Enartis Stab Micro M is used to stop the growth of acetic and malolactic bacteria which otherwise can metabolize residual sugars, increase acetic acid content and inhibit fermentation restart.

Control MLF

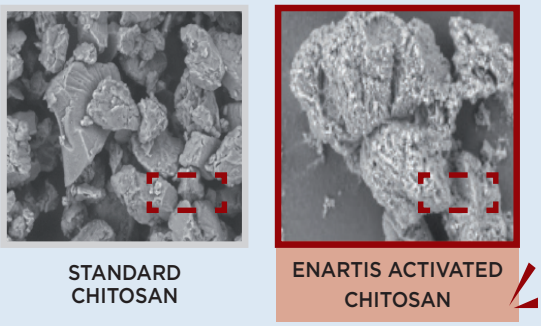
Prevent, delay or stop MLF by eliminating *Oenococcus*. Enartis Stab Micro M is an alternative to lysozyme, with additional advantages: allergen-free compound, vegan friendly, no impact on protein stability and no significant impact on color.

Prevent reductive characters at the end of fermentation

At the end of alcoholic fermentation, the early addition of sulfur dioxide can result in the formation of H_2S. This is due to the enzymatic activities of the fermenting yeast that remain active for at least 10-15 days after the end of alcoholic fermentation. An addition of SO_2 in this phase activates the sulfite reductase activity that turns the toxic compound into the more harmless H_2S. The use of Enartis Stab Micro M means you can postpone sulfur addition by at least 2 weeks whilst ensuring the wine is protected from spoilage microorganisms.

WHAT IS ACTIVATED CHITOSAN AND HOW IT IS DIFFERENT FROM STANTARD CHITOSAN

Chitosan antimicrobial action is accomplished by contact. The positive charges present on its surface attract wine and juice microorganisms that are all negatively charged. Subsequently, it alters the permeability of the cell membrane and causes the microorganism to die for osmotic shock.



STANDARD CHITOSAN

ENARTIS ACTIVATED CHITOSAN

Activated chitosan, the main component of Enartis Stab Micro M, is obtained with a unique production process that amplifies its antimicrobial action. During production, organic acid treatment increases the chitosan positive charge and contact surface. The activated chitosan plays a faster and wider action than a “standard” chitosan.