NO animal ORIGIN

NO GMO

Ready Gum

Complete Range of Gum Arabic Products for Use in Winemaking

For all stability needs and for sensory balance achievement

Perdomini IOC

Vediamo diversamente

A COMPLETE RANGE FOR ALL STABILITY NEEDS AND FOR ATTAINMENT OF SENSORY BALANCE

Gum arabic - also known as Acacia gum - is a sticky sap produced naturally by certain sub-species of Acacia native of Africa after a stress (fungal or bacterial attacks) or when the trunk or branches are cut.

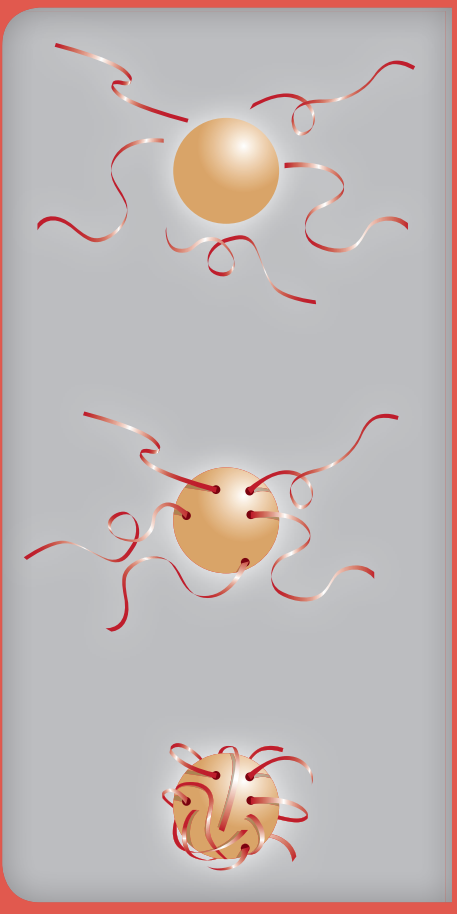
It's a totally natural product composed of a complex mixture of high-molecular-weight polysaccharides, mineral salts and glycoproteins.

Gums from different sub-species contain the same types of sugars (galactose, arabinose, rhamnose and glucuronic acid) but in varying proportions. These proportions determine how the gums behave in relation to the stability of the wine, regardless of how they are processed or their formulas are prepared.

THE PROTECTIVE COLLOID

In wine, gum arabic acts as a protective colloid thanks to its composition of macromolecular polysaccharides. It works by forming a coating on the surface of the unstable colloid particles, thus stopping them from aggregating. However, not all gums arabic fully perform this function: that depends on the particular structure and composition of the polysaccharide chain.

The hydrophobic colloid with the potential to precipitate is enveloped by the polysaccharide and glycoprotein structure of the gum, which creates conditions making it impossible for the particle to aggregate.



Hypothetical mechanism governing the action of polysaccharides in protecting colloid particles.

Oenology Treatise II. P.Ribéreau-Gayon, Y.Glories, A.Maujean, D.Dubourdieu. Edagricole.

At the production plant in San Martino Buon Albergo on the outskirts of Verona, Italy, Perdomini-IOC produces a complete range of gum arabic products in solution form, using specially dedicated equipment of contemporary design and construction. Thanks to the ground-breaking production processes and analytical tools used (the fruit of our continuous R&D efforts), Perdomini-IOC can today boast a store of unique technical, scientific and production know-how in the field of gum arabic, and can guarantee high standards of quality and reliability.

Thanks also to our experience in the area of filtration and microfiltration, we have been able to perfect a number of special production techniques that have made it possible to develop liquid gum arabic products compatible with the needs of pre-bottling microfiltration processes.

Part of the production equipment for gum arabic in solution form at Perdomini-IOC plant near Verona.

Gums and Filtration

READY GUM PREMIUM AND MICROFILTRATION:

Thanks to their high capacity for creating structure, levorotatory gums arabic generally have medium or high clogging index, making them unsuitable to use at the pre-bottling stage.

Ready Gum Premium, obtained using a unique production process, is compatible with microfiltration and maintains its characteristics as a colour-protecting colloid and its structuring ability. The filterability tests carried out in the R&D laboratories at Perdomini-IOC and the semi-industrial and industrial tests performed have demonstrated that Ready Gum Premium is compatible with pre-bottling microfiltration.

Ready Gum *Premium* : the levorotatory gum arabic in a solution suitable for microfiltration!

READY GUM PREMIUM AND FILTERABILITY

NTU (TURBIDITY)

READY GUM PREMIUM AND FILTERABILITY

CI (CLOGGING INDEX)

Average scores obtained from the analysis of 10 white wines and 10 red wines concerning their turbidity index (NTU) and clogging index (CI).

Comparison between wines treated with Ready Gum Premium and a competitor product (Gum A) using a dosage of 100g/hl.

NEW KNOWLEDGE ABOUT TREATING WINES WITH GUM ARABIC DURING THE STABILIZING FILTRATION PROCESS

A recent study carried out by Perdomini-IOC in cooperation with the Oenology Research Centre (CRA-ENO) in Asti, Italy (BORSA D., ASPROUDI A. CRA - Centro di Ricerca per l'Enologia) gave an important insight into the impact of gum arabic on the membranes used for the final microfiltration.

In particular, a quantitative analysis was made on gum arabic (pentose sugars: arabinose and galactose) by performing a gas chromatographic analysis (Will & Dietrich, 1990) before and after the stabilizing filtration stage, using membranes made of different kinds of materials.

The results obtained demonstrated that the passage of the wine through the final filtration membranes used in the tests did not leave the Ready Gum 20 and Ready Gum Premium added before filtration, therefore the efficacy of these treatments in the finished wine is guaranteed.

Cold test of colour stability (4°C).

Dosage of RG Premium and RG L: 100g/hl

ReadyGum *Premium*

- Suitable for microfiltration
- Colour stabilizer
- Adds body, structure and smoothness

APPROVED FOR MICROFILTRATION

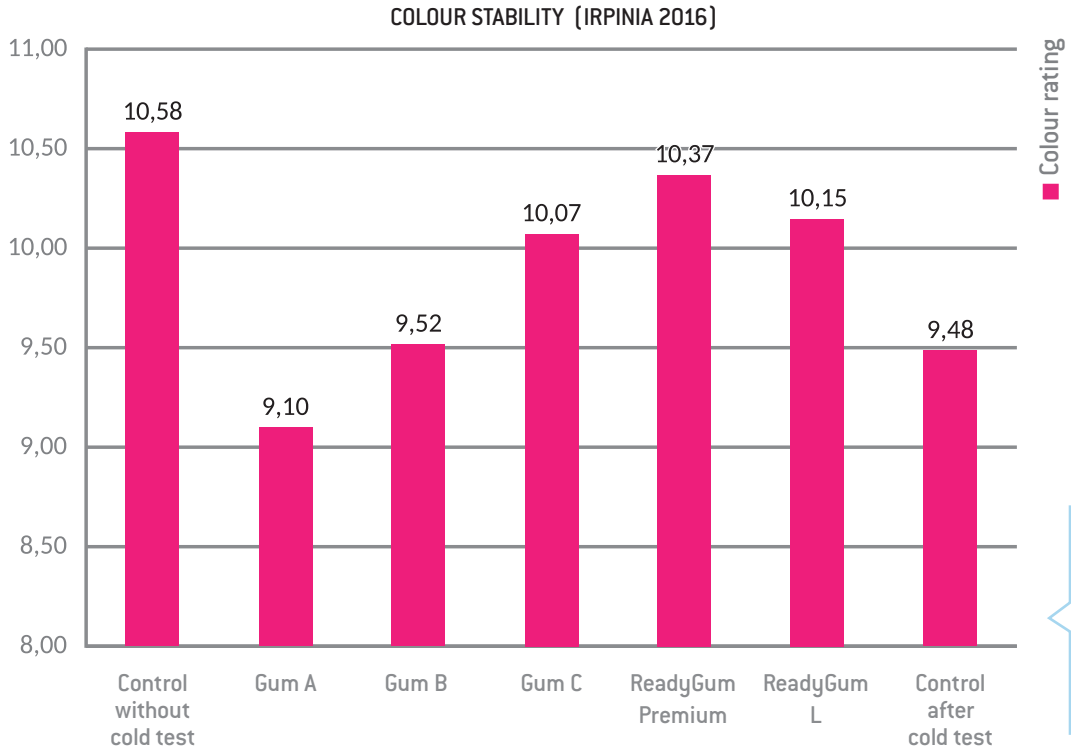
COLOUR STABILITY

Colour stability is a highly important characteristic for red wines, which obviously have to be able to guarantee quality that remains unaltered over time.

It's well known that the unstable colloidal materials responsible for creating colour are sensitive to the cold and are found in high quantities in young wines, which are generally full of unstable colloids. Nevertheless, more mature wines can be faced with this kind of problem, which depends on various factors including the production technologies used in the winery, the health of the grapes and the various winemaking techniques used.

Coloured precipitates are a mixture of anthocyanins, tannins, polysaccharides and at times also tartrates. This can be easily detected by keeping the wine at a low temperature for 48 hours. In a potentially unstable wine, a precipitate composed of colloidal material will form as a result of the cold.

Gum arabic, in particular the gum of the *Acacia Senegal*, has a particular polysaccharide structure that allows it to act as a protective colloid on colour-producing material.



Analysis of the competitors: colour intensity (colour points) expressed as the sum of O.D. at 420nm, 520nm and 620nm after a cold test (4°C for 48hrs) with a dosage of 100g/hl.

Gum arabic in solution form obtained from the *Acacia Senegal* and distinguished by a powerful levorotatory action.

Composition: E414 gum arabic (21.0%), preservatives: E220 sulphur dioxide (0.5%).

Ready Gum Premium acts as a protective colloid on iron, copper, colour and colloidal material by enveloping the particles and stopping them from aggregating into colloids large enough to cause physical instability.

The polysaccharide composition of Ready Gum Premium also gives to the wine greater drinkability, structure and smoothness, while reducing its astringency. In young wines marred by excessive astringency, it masks the overload of tannicity and re-establishes the right balance of sensory characteristics. In well-balanced but poorly structured wines, it creates more body and fullness.

DOSAGE:

30-80g/hl to prevent colour precipitation

50-100g/hl to attain the desired sensory effect

We recommend performing laboratory tests for dosage above 100g/hl.

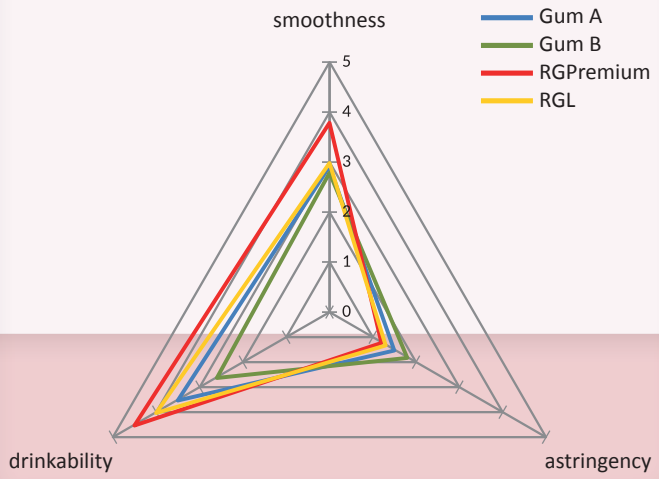
Ready Gum Premium is recommended for treating white, red and fortified wines any time there is a risk of opacity, flocculation or precipitation after bottling.

Ready Gum Premium is characterized by the fact that it's only slightly cloudy and is approved for microfiltration.

We advise adding Ready Gum Premium to the finished wine, either before or after the last pre-bottling filtration process.

READY GUM PREMIUM, READY GUM L AND LEVOROTATORY GUMS ARABIC (100G/HL). TABLE RED WINE.

Average scores awarded by 10 tasters: red table wine treated with 100g/hl of Ready Gum Premium, Ready Gum L and other competitors levorotatory gums arabic.



ReadyGum L

- Not suitable for microfiltration (added inline)
- Colour stabilizer
- Gives greater body and structure

High-quality gum arabic extracted from the *Acacia Senegal* and characterized by a powerful levorotatory action.

Composition: E414 gum arabic in aqueous solution 20.5%, E330 citric acid 1%, preservatives: E220 sulphur dioxide 0.5%.

Ready Gum L acts as a protective colloid on: iron, copper, colour-producing material and colloidal substances.

Ready Gum L works by enveloping hydrophobic micelles and stopping them from aggregating into colloids large enough to cause physical instability.

The polysaccharide composition of Ready Gum L gives the wine greater body and structure and improves the overall sensation of organoleptic roundness.

Therefore Ready Gum L is suitable for treating white, red and fortified wines any time winemakers want to avoid clouding, flocculation or precipitation after bottling.

Ready Gum L is distinguished by the fact that it's only very slightly cloudy.

We advise adding Ready Gum L to finished wines, after the final filtration process.

DOSAGE:

30-60g/hl to prevent colour precipitation

50-100g/hl to obtain the desired sensory effect

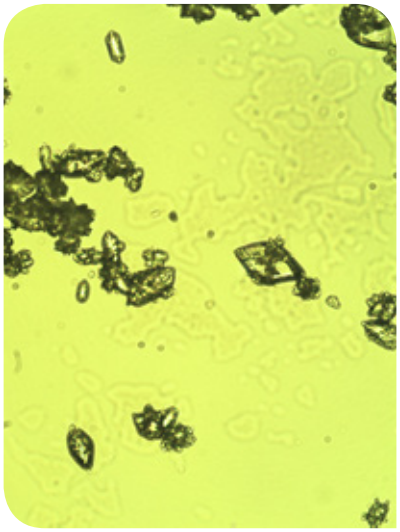
We recommend performing laboratory tests to determine the optimum dosage.

TARTRATE STABILITY

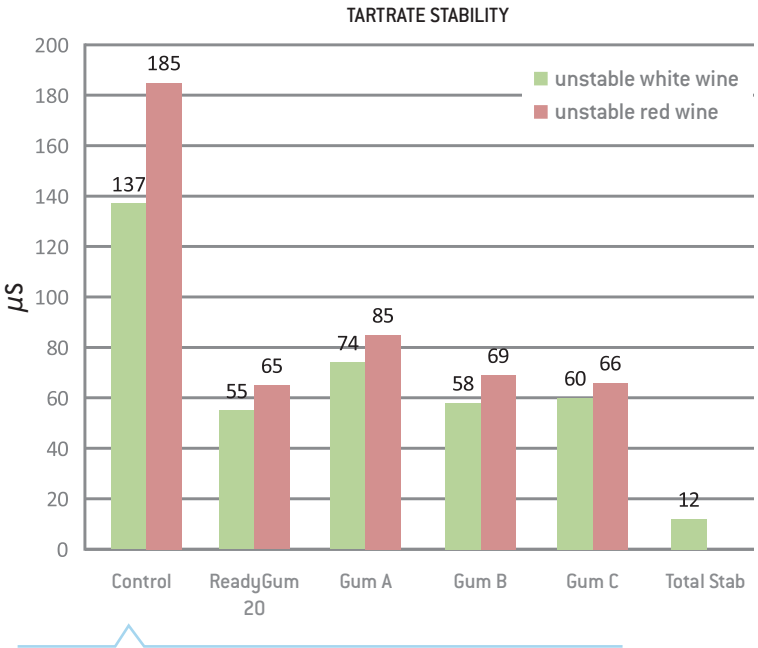
Tartaric acid is the main acid found in wine; together with the cations that are usually present, it forms salts that lead to the classic crystal sediment which can be recognized in the bottle.

The stability and non-precipitation of tartrates can be achieved in various different ways depending on the type of wine and the production techniques used in the winery. There are methods to remove the salts, such as cold treatments and preventive methods such as the addition of products that stop the salts from precipitating.

Gum arabic, in particular the gum of the *Acacia Seyal* with its unique polysaccharide composition, acts as a protective colloid even on tartrate salts. It stops them aggregating and therefore avoids forming of larger crystals which then precipitate.



Tartrate crystals in an unstable white wine photographed with an optic microscope.

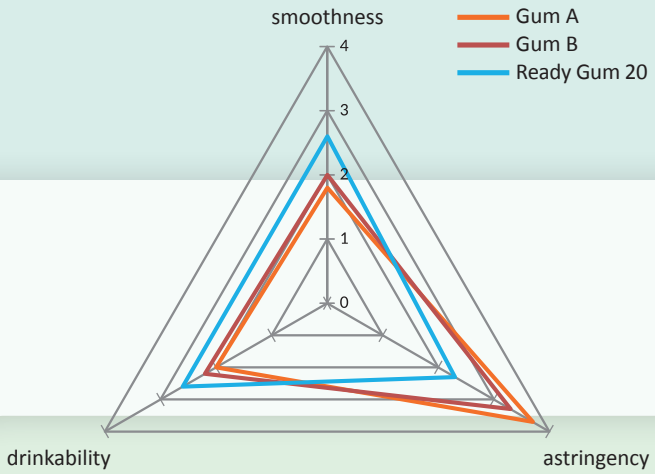


Analysis of the competitors: potential drop, dosage 100 g/hl (mini contact test - CheckStab µS).

ReadyGum 20

- Suitable for microfiltration
- Gives tartrate stability
- Increases drinkability, smoothness and sensory balance

APPROVED FOR MICROFILTRATION



Total Stab

- Suitable for microfiltration
- Gives tartrate stability
- Increases drinkability

APPROVED FOR MICROFILTRATION

DOSAGE:
40-100g/hl to prevent tartrate instability
50-200g/hl or more to achieve the desired sensory results

We advise performing laboratory tests to determine the optimum dosage.

Gum arabic in solution form obtained from the *Acacia Seyal* and characterized by its considerable dextrorotatory power.

Composition: 20.5% gum arabic (E414); preservatives: 0.5% sulphur dioxide (E220).

Ready Gum 20 is obtained through a unique production process that ensures the solution will have high levels of limpidity (NTU = 20) and stability.

When added to the wine, Ready Gum 20 acts as a protective colloid, reducing or eliminating various forms of chemical and physical instability in general - and in particular tartrate crystals - by stopping the colloids from aggregating and forming a precipitate.

Ready Gum 20 is recommended for treating white, red and fortified wines any time winemakers want to avoid clouding, flocculation or precipitation after bottling.

In young wines marred by excessive astringency, Ready Gum 20 masks the excess tannicity and re-establishes the right balance of flavours.

In well-balanced but thin wines, it lends greater body and fullness.

READY GUM 20 AND DEXTROROTATORY GUMS ARABIC (100G/HL). TABLE RED WINE

Average scores awarded by 10 tasters: red table wine treated with 100g/hl of Ready Gum 20 and other rival dextrorotatory gum arabic products.

Total Stab is a solution made of gum arabic obtained from the *Acacia Seyal* and carboxymethylcellulose.

Composition: E414 gum arabic (10%), E446 carboxymethylcellulose (9%). Preservative: E220 sulphur dioxide (0.18-0.36%).

Total Stab is suitable for making white and rosé wines; it inhibits the formation and growth of potassium bitartrate crystals, thus preventing the formation of sediment in the bottle. It's especially effective when added before microfiltration.

The components of Total Stab have been selected in order to achieve a product that is easy to use, effective and non-clogging.

Thanks to these characteristics, Total Stab can be used just a few hours before the final microfiltration stage.

DOSAGE:
10-100ml/hl.
With a dosage of 110ml/hl, the maximum allowed quantity of carboxymethylcellulose (10g/hl) is reached.

GUMS ARABIC IN POWDER FORM

High-quality powdered gum arabic, obtained from the *Acacia Seyal* and *Senegal* and with the power to act as a protective colloid on: iron, copper, colour-producing materials and colloidal substances by enveloping the hydrophobic micelles and stopping them from aggregating into colloids large enough to cause physical instability.

The powder format means that winemakers get all the benefits of a high-quality gum arabic without adding water or citric acid.

Dry Gum R

Dry Gum R is a spray-dried gum arabic obtained from the *Acacia Seyal* with dextrorotatory power. It acts as a protective colloid on various forms of tartrate instability and is recommended for use in white, red, rosé and fortified wines whenever winemakers want to avoid the precipitation of tartrate salts after bottling.

The polysaccharide structure of Dry Gum R has been revealed to be of significant aid in improving the sensation of smoothness in wines and also in reducing clogging.

We advise adding Dry Gum R to the finished wine, either before or after the final pre-bottling filtration stage.

DOSAGE
10-100 g/hl
We advise performing laboratory tests to determine the optimum dosage.

Dry Gum L

Dry Gum L is a powdered gum arabic obtained from the *Acacia Senegal*. It acts as a protective colloid regarding colour instability, making it suitable for treating red, rosé and fortified wines whenever winemakers want to avoid colour precipitation problems after bottling.

The specific polysaccharide composition of Dry Gum L acts on the wine by giving it greater structure and roundness of aromas and flavours, with the added benefit that it is low-clogging.

We recommend adding Dry Gum L to finished wines, either before or after the last filtration process before bottling

DOSAGE
10-100 g/hl
We advise performing laboratory tests to determine the optimum dosage.

IMPACT ON THE COLOUR, AT 420NM, OF WHITE WINE USING DOSAGES OF 100 AND 200 G/HL: READY GUM PREMIUM, READY GUM L, READY GUM 20

	Control	ReadyGum Premium 100 g/hl	ReadyGum Premium 200 g/hl	ReadyGum L 100 g/hl	ReadyGum L 200 g/hl	ReadyGum 20 100 g/hl	ReadyGum 20 200 g/hl
A420nm	0.071	0.0721	0.0742	0.0723	0.0744	0.0737	0.0714

RATING OF THE MAIN ORGANOLEPTIC AND APPLICATIVE FEATURES

	ReadyGum 20	ReadyGum PREMIUM	ReadyGum L
Smoothness	●●●●●	●●●●●	●●●●
Structure	●●●	●●●●●	●●●●●
Tartrate stability	●●●●●	●●	●●
Colour stability	●●	●●●●●	●●●●●

BIBLIOGRAPHY

1 / Harris P.J., Blakeney A. B., Henry R.J., Stone B.A., 1988. *Gas chromatographic determination of the monosaccharide composition of plant cell wall preparation.* J. Assoc. Off. Anal. Chem., 71, 272-275

2 / Usseglio Tomasset L., 1976. *Les colloÏdes glucidiques solubles des moûts et des vins.* Conn. Vigne Vin, 10, 193-198.

3 / Will F., Dietrich H., 1990. *Untersuchung der Zuckerbausteine von Polysacchariden des Wines.* Z. Lebensm. Unters. Forsch., 191, 123-128.

4 / *Elementi di chimica del vino.* Yair margalit. Enoone 2004.

5 / *Gum Arabic* – Martin Glicksman (General foods Corp., Tarrytown, N.Y.) and Ralph E. Sand (Anderson Clayton Foods, Richardson, Texas) – Capter X.

6 / *Trattato di enologia II.* P.Ribéreau-Gayon, Y.Glories, A.Maujean, D.Dubourdieu. Edagricole.

LIME SOLUTIONS / VR

Perdomini IOC
Vediamo diversamente

Perdomini-IOC S.p.A. - 37036 S. Martino B.A. (Verona) Italy - Via Salvo D'Acquisto, 2
Tel. +39 045 8788611 r.a. - Fax +39 045 8780322 - 122
www.perdomini-ioc.com / info@perdomini-ioc.com