AGLUMIX 01

TARA GUM. A NATURAL PRODUCT FROM PERU.

PEOPLE. PASSION. TEXTURE.

JRS SILVATEAM INGREDIENTS

FOOD INGREDIENTS

CAESALPINIA SPINOSA

A natural thickening and stabilising agent from Latin America

Botanic description

Tara gum is a natural additive, obtained by grinding the endosperm of the seeds of *Caesalpinia spinosa*, belonging to Leguminosae family. Tara gum, also called Peruvian carob, is a white to yellowish powder which is soluble in hot water and partially soluble in cold water.

The tree is native to the Cordillera region of Peru and Bolivia in South America that can reach a height of 12 meters. It grows widely up to 3,000 meters above sea level and tolerates dry climates and poor soils, including those rich in sand and rocks. The leaves are compound, pinnate, alternate and spirally organised and reach a length of 35 cm. The fruit is a flat, oblong, indehiscent, reddish pod which contains 4 - 7 round, black seeds composed of endosperm (22% by weight), germ (40%) and hull (38%).

Traditional uses

Tara pods are an excellent source of environmentally friendly tannins most commonly used in the manufacture of **automotive leather**.

In fact, tara powder contains practically no colouring substances and produces very bright, light resistant leathers. Gallic acid is the main constituent of tara powder (53%) and can be easily isolated by alkaline hydrolysis of the pods.

Medicinal uses of tara in Peru include gargling infusions of the pods for inflamed tonsils, wounds washing, healing of fever, cold and stomach ache. Other applications involve cleansing of hair that is treated with decoctions obtained by macerating parts of the plant.

THE TARA GUM SPECIALIST

A leading producer of fair trade
and organic solutions for food, pharma and cosmetics industry

Aglumix®01

Silvateam is a global leading producer of tara gum. Its production capacity has reached more than 1,600 tonnes per year. Based in the industrial area of Chilca (Peru), the modern manufacturing plant is devoted to the production of tara gum (Aglumix®01) for the food industry and tara powder (Ormotan®) for the leather market.

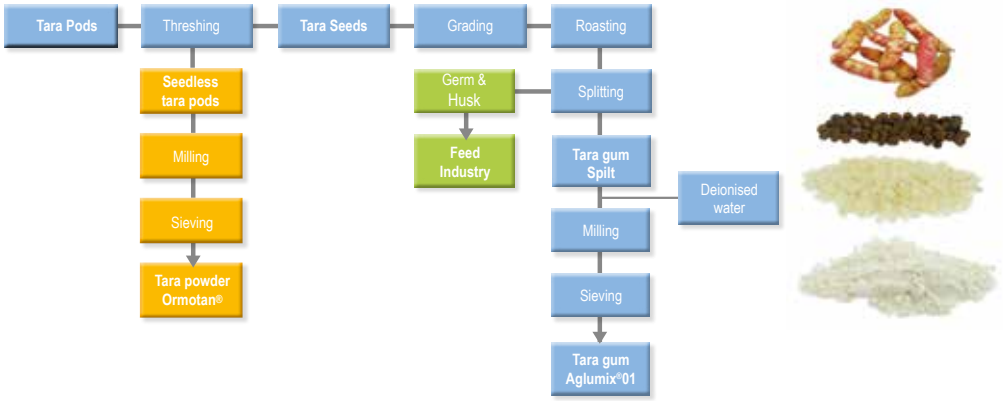
Tara gum is commercialised in different grades, such as standard, low and high viscosity as well as 100% organic. Aglumix®01 is packed in 25Kg paper bags or bulk bags.

A fully equipped laboratory and its highly qualified technicians guarantee the quality of all production batches. The company is certified **ISO 9001:2015, FSSC 22000, Organic, Fair Trade, Halal and Kosher**.

Recently, JRS Silvateam Ingredients has been created from the joint venture between the Italian group Silvateam and the German group J. Rettenmaier & Söhne. The company commercialises globally tara gum. It also has invested significantly in research and development, establishing an applications and development centre in Bergamo (Italy) to study the properties, interactions and applications of Aglumix®01 with other hydrocolloids. The use of these extensive laboratories and pilot plants allows customers to develop their products using the best technical support and to achieve the correct results.

Production process

The tara seeds, extracted from the pods by **threshing,** are sieved to remove impurities and to select the best ones. The seed hull, which is tough and hard, requires a **roasting process** to break it down and to obtain the endosperm, which is then grinded and sieved, after being separated from the germ and hull itself. The result is tara gum, a white to yellowish, odourless powder, which is soluble in hot water and partially soluble in cold water but not in ethanol.



MULTIPLE BENEFITS

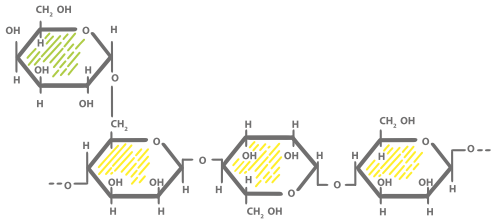
A valid alternative to locust bean gum in endless applications

Key advantages

The benefits of Aglumix®01 can be achieved using it alone or in combination with other selected hydrocolloids:

- **Soluble in hot water and partially soluble in cold water**
- **High viscosity**
- **Lower dosage and better flavour release compared to some other hydrocolloids**
- **Good synergy with other hydrocolloids in order to increase viscosity and gel strength, while reducing syneresis**
- **Good stability under acidic conditions**
- **Good stability during high temperature heat treatment**

Tara gum is **authorised as a food additive** according to Regulation (EC) N. 1333/2008 on food additives. The EFSA Panel on Food Additives and Nutrient Sources, the EU Scientific Committee for Food (SCF) and the Joint FAO/WHO Expert Committee on Food Additives (JECFA) allocated an **acceptable daily intake (ADI) 'not specified'** for this gum. In Canada, Australia and New Zealand it is approved as ingredient with the code E417.



Locus bean gum replacement

The price of **locust bean gum (LBG) hit record highs** over the last years, with a reduced short-term availability due to an ever-increasing demand and an inadequate global production capacity. This led to a prompt need to reformulate.

Tara gum can be a valid alternative to LBG, while offering comparable performance at a lower cost. It can be used in everything from ice cream to almond milk, frozen desserts, cream cheese and fruit fillings.

This sustainable plant-based stabilising and thickening agent is gaining popularity within many formulations because of its technical properties, clean flavour and consumer friendly name.

Tara gum and LBG have similar structure: the ratio of mannose to galactose in tara gum is 3:1, while in LBG is 4:1. Tara gum resists to the depolymerisation effect of organic acids to a pH of 3.5. LBG is stable to a pH of 3.0.

The **viscosity of a 1% solution of tara gum is around 5,500 cps** and almost three times higher than LBG.

Tara gum is stable to high temperature heat treatment. It can resist up to 145°C / 293°F throughout a plant process or 121°C / 250°F for 30 minutes in batch sterilisation. These characteristics are similar to the ones shown by LBG.

SOCIAL RESPONSIBILITY

A development opportunity for 10,000 families who live off the land

A consistent source of income

The communities of farmers who live in the inhospitable valleys of the Peruvian Andes, where the *Caesalpinia spinosa* tree grows wild, normally rely on a subsistence economy that is limited to a small-scale self-production, within an agricultural context that is highly underdeveloped both in terms of equipment and available resources across the territory.

By making significant investments in the country, such as a new factory in the district of Chilca and three plantations, Silvateam has committed itself to creating an **important source of supplementary and stable income for many local communities, who are now engaged in harvesting the pods of this tree.**

Thanks to the strategic commercial successes and the high recognition obtained by the *Caesalpinia spinosa* based products throughout several industries, Silvateam production and turnover have grown significantly. Almost 50% of this income is transferred as labour force payment to more than 10,000 local families who live off the land. This is an example of the redistribution of resources from most developed country-systems to a region that is undoubtedly steeped in historical charm.

Silvateam, through multi-annual contracts, enables the Peruvian farmers to sell their harvest at fair prices and good quantities, improving the quality of their life.

Promoting vocational training

Silvateam promotes **specific community support programmes,** such as the annual medical check-up plan to prevent the most common diseases, the assistance service in dealing with administrative practices, subsidised loans and the possibility of practising sport in the dedicated facilities near the manufacturing plant.

Specialist training courses, organised in collaboration with the Peruvian National Institute of Natural Resources, are aimed at providing farmers with the best harvesting practices in order to increase their productivity and the value of their activity.

The commitment of Silvateam towards its employees firstly concerns the labour sphere, involving various aspects ranging from the drafting of transparent contracts for workers to the prohibition of child labour, from the prevention of accidents in the workplace to the maintenance of a safe environment avoiding any health related risk (lighting, ventilation, noise and dust reduction).

The creation of a consolidated supply chain has enabled Silvateam to obtain the **Fair-Trade certification and to contribute to the development of these rural areas,** even more important if one considers that, in spite of the growing rates during recent years, the South American country still has a high Extreme Poverty Index rating.

TARA PLANTATIONS

Sustainable sourcing and production best practices to safeguard the environment

Silvateam activity in Huánuco and Ica

A part of the *Caesalpinia spinosa*, used as raw material within the production, grows wild and is harvested by local farmers, sold in the collection centres in the community neighbourhoods and then transported to the factory.

The remaining part is **successfully obtained from three proprietary plantations, the only ones present in Peru,** which extend over an area of **620 hectares,** divided between the mountain region of Huánuco and desert area of Ica.

The **Huánuco plantation,** which was established in 2002, is located in the Andean cordillera at 2,500 metres above sea level and comprises 170,000 plants. The production of tara gum deriving from these pods has been **certified organic.**

The Ica desertic plateau hosts two plantations, one dating back to 2006 and the other one more recent to 2021. Around 350,000 plants are cultivated in this area, over 65% of which adopting **multiple planting density lay-outs, watered by underground aquifers.**

Planting new trees in such a desertic area means playing a relevant role in the climate crisis, by counteracting water scarcity and mitigating greenhouse gas emissions.

Crop productivity improvement

Over the last decade, Silvateam has conducted different field and laboratory studies in order to maximise the productive yield of its plantations. Firstly, the most high-performing cultivars were researched and selected to carry out floral biology assessments in relation to sexual and asexual reproduction and progeny tests. Secondly, several agro-climatic evaluations were aimed at identifying the most suitable areas in Peru to grow *Caesalpinia spinosa*.

All the plantations use **a micro-irrigation system** as a tool to increase the production yield and reduce the consumption of water, in particular in the desert region of Ica, where water is in short supply. Furthermore, the pollination of the flowers is facilitated by the bees population coming from the beehives positioned among the trees.

In the Ica plantations, Silvateam continuously improves its operational methods, by adopting **semi-mechanised harvesting systems,** such as nets for harvesting the pods, cleaning tools to remove leaves and impurities, as well as a packaging machine to facilitate the handling and transportation to the factory, where the raw material is processed.

AGLUMIX® 01 BY APPLICATION

Easy to use, high performing solution, used alone or in synergism with other hydrocolloids

Application	Key benefits
Pastries, cakes and gluten free bakery products	• Soft texture • Lasting freshness • Excellent cuttability • Good shape retention
Dairy desserts	• Low whey syneresis • Good cuttability in gelled products • Texture and mouthfeel improvement
Cheese based products	• Spoonable structure • Shiny appearance to spreadable products • Good stability, with low whey syneresis
Ice creams, frozen mousse, fruit ice creams (sherbets) and sorbets	• Good overrun • High water absorption • Crystal formation reduction • High resistance to heat shock • Excellent body, smooth texture and good mouthfeel
Ice lollies	• Low ice crystal formation • Good resistance to heat shock • Creamy mouthfeel
Water jellies	• Low syneresis • Good texture • Excellent cuttability
Yoghurt fruit preparations	• Good body and rich mouthfeel • Low syneresis • Consistent fruit suspension
Sausages, hamburgers and frankfurters	• High water retention • Meat replacement • Good gel structure
Sauces and dressings	• High viscosity • Low syneresis • Good emulsion stability • Thixotropic structure • Suitable for instant applications

Notes:

Notes:

PEOPLE. PASSION. TEXTURE.

JRS SILVATEAM INGREDIENTS

Our passionate application specialits can help your product development technologists to meet their targets in creating innovative, appealing and sustainable products: our contribution to your market success.

www.jrs.silvateam.com

JRS Silvateam Ingredients S.r.l.
Via Bergamo, 38 - 24035 Curno (BG) Italy
Tel. +39 035 301149 - Email: solutions@silvateam.com