

## GUAR GUM POWDER

Guar Gum is relatively cost effective as compared to other thickeners and stabilizers along with it being an effective binder, plasticizer and emulsifier. One of the important properties of guar gum, a polysaccharide, is that it is high on galactose and mannose. Guar gum is also known as guarkernmehl, guaran, goma guar, gomme guar, gummi guar and galactomannan.

Endosperm of guar seeds are used in many sectors of industries like mining, petroleum, textile, food products, feed Products, Pet Food, pharmaceuticals, cosmetics, water treatment, oil & gas well drilling and fracturing, explosives, confectioneries and many more. Since a long time Guar Gum can be also named as a hydrocolloid, is treated as the key product for humans and animals as it has a very high nourishing property.

### **Guar Gum Powder Number**

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1. HS-Code of Guar Gum Powder: 130.232.30
2. CAS No. of Guar Gum Powder: 9000-30-0
3. EEC No. of Guar Gum Powder: E412
4. BT No. of Guar Gum Powder: 1302.3290
5. EINECS No. of Guar Gum Powder: 232.536.8
6. Imco-Code: Harmless

Guar Gum is mainly used as a

- Natural thickener
- Emulsifier
- Stabiliser
- Bonding agent
- Hydrocolloid
- Gelling agent
- Soil Stabiliser
- Natural fiber
- Flocculants
- Fracturing agent

### Applications - Guar Gum Powder

#### **Guar Gum for Food Industries**

Guar gum is one of the best **thickening additives**, **emulsifying additives** and **stabilizing additives**. In Food Industry Guar gum is used as gelling, viscosifying, thickening, clouding, and binding agent as well as used for stabilization, emulsification, preservation, water retention, enhancement of water soluble fiber content etc.

Some food products in which guar gum powder is used:

- Ice Cream, soft drinks & concentrates, puddings
- Chocolate milk, flavoured milks
- Jams, jellies, fruit spreads, jelly sweets
- Bread, biscuit and other baked foods
- Ham and sausages
- Soft cheese and cheese spreads
- Canned or retorted food of fish and meat
- Myonnaise, ketchup, sauce and dressings
- Noodles and pasta

**In Frozen Food Products:** Guar gum reduces crystal formation, act as a binder & stabilizer to extend shelf life of Ice-cream.

**In Baked Food Products:** Guar gum provides unparallel moisture preservation to the dough and retards fat penetration in baked foods.

**In Dairy Products:** Guar Gum improves texture, maintains uniform viscosity and color.

## Fast Hydration Guar Gum Powder

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**Guar is also known as Cluster Bean (cyamopsis Tetragonoloba) a drought hardly leguminous crop.** Guar is being grown for seed, green fodder, vegetable and green manuring. It is an annual plant about 4 feet high, vertically stacked, large leaves and clusters of pods. The pods are used as a green vegetable or as a cattle feed besides the industrial extraction of Guar gum.

### Properties of Guar Gum:

- It is soluble in cold water.
- It has strong hydrogen bonding properties.
- It has excellent thickening, emulsion, stabilizing and film forming properties.
- It has excellent stability to control rheology by water phase management.

### Guar Gum is used as:

- Natural thickener
- Emulsifier
- Stabilizer
- Bonding agent
- Hydrocolloid
- Gelling agent
- Natural Fiber
- Fracturing agent

The natural fast hydrating, dispersible and diesel slurriable guar gum is ideally suitable for all rheological requirements of oil well drilling, continuous fracturing and diesel slurry. It is widely used in oil well drilling due to its multi-function such as fluid and water loss control, viscosity control, lubrication. It is used for cooling of drill bits, mud drilling and cementing slurries, where immediate high viscosity and quick hydration is required.

The main use of guar gum is in top hole oil well drilling. Industrial grade guar gum powder is suitable for use in oil well fracturing, oil well stimulation, mud drilling and serves as a stabilizer, thickener and suspending agent.

In oil well drilling guar gum used as a surfactant, fracturing fluid and synthetic polymer for all requirements of water based and brine based oil well drills. It attains high viscosity in 3 to 5 minutes of time.

### ▣ Fast Hydrating Slurriable Guar

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The natural fast hydrating and slurriable guar is a non ionic guar, polymeric viscosifier that is slurriable up to 50 percent of solids in systems such as diesel fuel. In aqueous systems, its main use is in the stimulation of oil and gas wells as a fracturing fluid. This yields excellent pump ability, good hydration, good thermal stability and excellent shell life. It can be typically cross linked with borates and once cross linked it exhibits excellent carrying capacity to support sand or other proppants to be placed in the created fracture. The viscosity of hydrating slurriable guar can be reduced or broken by using enzymes, oxidizers or acids such as HCL.

### ▣ Guar Gum in Oil Field Applications

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- Industrial grade Guar gum powder are use in oil well fracturing, oil well stimulation, mud drilling and industrial applications and preparations as a stabilizer, thickener and suspending agent.
- It is a natural, fast hydrating dispersible guar gum and is diesel slurriable.
- In the oil field industry, guar gum is used as a surfactant, synthetic polymer and deformer ideally suited for all rheological requirements of water-based and brine-based drilling fluids.
- High viscosity Guar Gum products are used as drilling aids in oil well drilling, geological drilling and water drilling.
- These products are used as viscosifiers to maintain drilling mud viscosities that enable drilling fluids to remove drill waste from deep holes.
- Guar gum products also reduce friction in the holes, and so minimising power requirements. Some Guar Gum products act to minimise water loss should occur in broken geological formations.

## CASSIA TORA POWDER (CASSIA GUM POWDER)

Cassia Tora L., (*Cassia obtusifolia* L.), Caesalpiniaceae, is a wild crop and grows in most parts of India as a weed. A natural gelling agent which has industrial and food applications is made commercially from the seed. Cassia grows in hot, wet, tropical climates both wild and commercially. Cassia is a tonic, carminative and stimulant. Cassia contains 1-2 % volatile cassia oil, which is mainly responsible for the spicy aroma and taste. The primary chemical constituents of Cassia include cinnamaldehyde, gum, tannins, mannitol, coumarins, and essential oils (aldehydes, eugenol, and pinene); it also contains sugars, resins, and mucilage, among other constituents.

Cassia tora powder made from cassia tora seeds and cassia tora splits are some ancient natural ingredients. In India, cassia tora is used as a natural pesticide in organic farms. Roasted seeds are substituted for coffee, like tephrosia seeds. Cassia tora powder is most popularly used in the pet-food industry. It is mix with guar gum for use in mining and other industrial application.

Cassia gum is the purified flour from the endosperm of the seeds of Cassia tora and *Cassia obtusifolia* which belong to the leguminosae family. Seeds of *Cassia occidentalis* are a naturally occurring contaminant in the source material.

The intended use of Cassia gum is as thickener, emulsifier, foam stabilizer, moisture retention agent and/or texturizing agent in cheese, frozen dairy desserts and mixes, meat products and poultry products.

Cassia gum is combined with other hydrocolloids such as Carrageenan or Xanthan gum, they will synergistically form gels with unique properties.

### **Cassia Gum Powder Number**

<b>CAS No. of Cassia Gum Powder (Galactomannan)</b>	11078-30-1
<b>INS NO for Cassia Gum Powder</b>	427
<b>EINECS No. of Cassia Gum Powder</b>	234-299-6
<b>EEC No. of Cassia Gum Powder</b>	E499

### **Cassia Tora Powder international listings**

<b>Australia (AICS)</b>	Listed
<b>Korea</b>	KE - 17406

## Gelling properties of refined cassia gum powder:

Refined Cassia gum is a high number of galactose side chains prohibit the synergistic gelling effect with anionic polymers. As a result, a smaller amount of hydrocolloid blend containing cassia gum is needed in a food product to achieve the same effect as with carrageenan alone or blends of carrageenan with other related galactomannans.

### Cassia Gum is mainly used as a:

- Gelling Agent
- Thickener
- Emulsifier
- Stabiliser
- Bonding agent

### Applications - Cassia Tora Powder

#### Canned Pet Food Additives As A Gelling Agent

Cassia gum used in pet food industry as a gelling agent and is approved for use in Europe by the Commission Directive (EEC No. E 499) and is listed in the Annex of the Council Directive (70/524/EEC) as a stabilizer, thickening and gelling agent in the manufacture of canned pet foods for cats and dogs. A panel of experts in the areas of toxicology, pharmacology and food science was assembled to review the safety of cassia gum as a thickening agent in pet foods in the United States. The available data on cassia gum and structurally related gums demonstrate a lack of toxic effects in animals. This review is the basis for the consideration of cassia gum as generally recognized as safe under conditions of its intended use as a thickening agent in pet foods. Cassia gum or semi-refined cassia gum has been used since the early 1990s as a thickening and gelling agent in pet foods and canned meat for cats and canned meat for dogs.

### Cassia Gum For Food Industry

Based upon its chemical structure, cassia gum is stable during food processing and storage and it could only degrade, if at all, into sugars. The applications include the use of cassia gum in the food categories below, as described in United States Code of Federal Regulation 21 C.F.R. 170, at levels ranging from 2,500 mg/kg to 3,500 mg/kg (0.25 % - 0.35 %).

#### **Cheeses**

Cassia gum is used in chesses including curd cheese, whey cheese, cream cheese, natural cheese, grated cheese, processed cheese, dip cheese and miscellaneous cheeses.

Frozen Dairy, Desserts and Mixes

Cassia gum is used in ice cream, ice milks, sherbets and other frozen dairy desserts and specialties.

#### **Meat Products**

Cassia gum is used in all meat containing dishes including salads, appetizers, frozen multi course meat meals and sandwich ingredients prepared by commercial processing or using commercially processed meats with home preparation.

#### **Poultry Products**

Cassia gum is used in poultry products including all poultry and poultry containing dishes, salads, appetizers, frozen multi course poultry meals, and sandwich ingredients prepared by commercial processed poultry with home preparation.

## TAMARIND KERNEL POWDER (TAMARIND GUM POWDER)

Tamarind Kernel Powder is derived from the plant Tamarindus Indica. Tamarind is an evergreen tree.

Various grades are delegated to Tamarind Seeds following which these seeds are methodically ground to powder conserving their nutritious properties, than these seeds are roasted and decorticated. The kernels of these seeds are separated by color sorter to obtain, rich tamarind kernel powder. Tamarind pulp is one of the souring agent in Indian curries. For the reason that of sugar and acid contents the tamarind pulp is used in kitchens for curries, sauces, syrups and other food beverages. Tamarind kernel powder-deoil and tamarind kernel powder-oil supply by Altrafine Gums.

Tamarind Kernel Powder is also used in various food processing industries and applied largely in Ketchups, Ice creams, sauces, sherbet, baked food, pet food, meat product and instant noodles. **Tamarind kernel powder for textile industry** is used for different types of dyes, fabrics and textile printing applications.

### Applications - Tamarind Kernel Powder

#### **Food processing industry**

Tamarind Kernel Powder is used in food industries with its extensive applications in ketchups, Ice creams, Sauces, Sherbet, Baked Food, Pet Food, Meat Product and Instant Noodles.

#### **In textile industry as textile thickener and textile sizing**

Excellent thickening property of Tamarind Kernel Powder makes it a good thickening agent for textile industries. It is also used for the purpose of textile sizing.

#### **For sizing in dyeing industry and printing industry**

The penetration and fiber forming characteristics of tamarind kernel makes it an exceptional element for the purpose of sizing in dyeing and printing industry.

#### **Jute Sizing and Cotton Wraps**

The deep absorption property of tamarind kernel also makes it useful in the process of jute sizing and cotton wraps.

#### **Paper & Explosive Industry**

Having an attribute of high viscosity builder, tamarind kernel is used in paper and explosive industry.

#### **Oil drilling and gas industry**

Having an excellent property of a soil stabilizer, tamarind kernel is also extensively used in oil drilling and gas industry.

### Applications of TKP:

- It has excellent penetration & fiber forming property. It is very effectively used for sizing in dyeing & printing industry.
- It is also used for sizing in jute yarn & cotton wraps.
- It has extensive use in paper & explosive industry, where it is used as viscosity builder.
- It is very effectively used these days by oil drilling companies as soil stabilizer.
- It is widely used as textile thickener.
- It has numerous other applications & its low cost gives it an edge over other thickening agents.

## PSYLLIUM HUSK AND POWDER

Psyllium is obtained from plantago ovate or Psyllium plant. Psyllium plant grows in the region which has good exposure to sunlight, and the soils are well drained and sandy. This is an annual crop cultivated largely in Gujarat and in some parts of Rajasthan and Madhya Pradesh.

The Botanical name of Psyllium husk is Plantago Ovata, and it is better known as Isabgol in India.

Psyllium is mucilage having a combination of xylose, aucubin, galacturonic, arabinose, semi drying fatty oils.

Psyllium husk derived from bent layers are extracted from dried ripe seeds of plantago ovata frosk.

The Psyllium husks are thoroughly cleaned and sorted from anti farm fibers, mud, iron particles, dust, particles, stones and other waste products. They are then graded, taking their scientific values into account. Psyllium husks and powders are sorted with the help of these grades.

Psyllium consists of 80% water soluble fiber. Psyllium mucilage has a viscosity which is undeterred with 68 degrees F to 122 degrees F, by pH ranging from 2 to 10 and by sodium chloride up to 0.15 m.

### Application - Psyllium Husk and Powder

#### **Natural Laxative**

Psyllium is a natural laxative and its therapy heals constipation and other related health ailments.

#### **Acidity and ulcers**

Stomach ulcers and acidity problems are overcome with curing other related problems of bowels, piles and fissures.

#### **Highly beneficial for diabetic patients**

Psyllium is very helpful in reducing the formation of blood glucose after the consumption of meals, considerably reducing the requirement of insulin in human body.

#### **Reduces the chances of Colon cancer**

Psyllium intake forms a massive volume of bulk in human body making it a crucial element for passing of stool. This relative lessens the exposure of intestinal wall to toxic components formed in a stool.

#### **Helpful in reducing weight**

Psyllium is helpful in reducing weight as it develops a feeling of fullness which apparently reduces food intake responsible for increasing weight in human body. Hence it can be used in slimming diet.



## FENUGREEK GUM POWDER

Fenugreek, being botanically called as *Trigonella foenum-graecum* is also known as “Methi” in Hindi. Fenugreek is an edible seed and hence its isolated gum is the latest addition to the list of galactomannan gums. Fenugreek is an annual crop, mainly cultivated in India. Fenugreek gums was not used in industries till 1990 but after that fenugreek had dual use by removing

the spice and other components and separate the unique galactomannan which is also known as fenugreek gum powder to be used in the industries. Currently fenugreek gum is having high demand as it is having considerable amount of applications in industries. Fenugreek being an annual legume plant, is native to the Mediterranean region but is also grown in Middle East, Asia and Africa. India is an important exporter of Fenugreek seeds. Moreover, in India fenugreek is used as a spice as well as in medicines also.

### **Properties of Fenugreek Gum Powder**

The fenugreek gum powder is tasteless and odourless. It contains galactomannan which is a polysaccharide made of galactose combined with mannan, high molecular compound of mannose. Galactomannan has the property of viscosity which can convert milk into ice cream, cocoa into chocolate and when dissolved in water it forms gum.

The ratio of galactose to mannose for fenugreek is 1:1 when compared to guar gum and locust bean gum having ratio of 1:2 and 1:4 respectively, it can be found that fenugreek gum powder contains more galactose and so has superior solubility as well as dispersiveness which results to forming of stable colloid for a longer period of time. As Mannan is hydrophobic, it is completely insoluble in water. But, as fenugreek gum powder is the combination of galactose which is hydrophilic and mannan which is hydrophobic, fenugreek gum is surface active.

It means that fenugreek gum powder is an emulsifier which can mix water and oil. Thus, fenugreek gum works as a gum and an emulsifier both which has enabled its use as a stabilizer for food. Compared to other conventional gums like guar gum and locust bean gum, fenugreek gum has superior characteristics and so is used in many industries.

### **Applications of Fenugreek Gum Powder**

Due to the presence of galactomannan in high proportion as the major component, in fenugreek gum powder, it has the quality of controlling blood sugar and blood lipid. So, it is considered very good for obesity and diabetic patients. Fenugreek gum powder also helps in reducing cholesterol, hypertension and chance of heart attack. Fenugreek gum powder also has the distinctive properties due to which the level of sugar in the blood can be lowered. Due to so many medicinal properties, fenugreek gum powder is used in tablet and capsules. It is also used in weight control formulation and other diet food.

## SESBANIA GUM POWDER

Sesbania gum is extracted from sesbania seeds which is originated from China. The sesbania gum powder is white loose milky powder which is soluble in water, insoluble in alcohol, ketones, ethers and other organic solvents. Sesbania gum powder can be dispersed in cold water to form a viscous solution. The viscosity of sesbania gum powder is 5-10 times higher than natural plant gum, sodium alginate.

### Applications of Sesbania Gum Powder

- Sesbania gum powder is used as sizing agents and dye thickeners in textile industries.
- It plays a major role as a flocculant in water and wastewater treatment.
- The most important use of sesbania seeds is in oil industry as it is used a blocking agent, water resistance-reduction agent and tackifier for preparing fluid cracking which results to increase in oil production rate.
- The sesbania gum powder is also used in incense.