

HYDROCOLLOID GLOSSARY

Agar (Agar-Agar):

- Origin: Extracted from red seaweed.
- Properties: Forms firm, brittle gels. Heat-stable.
- Uses: Vegetarian gelatin substitute, microbiological media, confectionery.
- Amount: 0.1% - 1.5% by weight of the liquid.

Alginate (PGA - PropyleneGlycol Alginate):

- Origin: Derived from alginic acid esterified with propylene glycol.
- Properties: Soluble in both water and some organic solvents. Forms gels with acids and calcium ions.
- Uses: Thickener, stabilizer, emulsifier in foods, especially fruit juices and sodas.
- Amount: 0.25% - 1% for most applications.



Alginate (Potassium Alginate):

- Origin: Extracted from brown seaweed, converted to potassium salt form.
- Properties: Water-soluble, forms softer gels with calcium ions.
- Uses: Food stabilizer, controlled-release pharmaceuticals.
- Amount: 0.25% - 1% for most applications.



Alginate (Sodium Alginate):

- Origin: Extracted from brown seaweed.
- Properties: Highly water-soluble, forms a gel with calcium ions.
- Uses: Spherification in molecular gastronomy, textile industry thickener, food stabilizer.
- Amount: 0.25% - 1% for most applications.

Arabic Gum (Acacia Gum):

- Origin: Sap of the Acacia tree.
- Properties: Emulsifier, stabilizer, thickener.
- Uses: Confectionery, inks, cosmetics.
- Amount: 5% - 30% for emulsions.

Beta-Glucan:

- Origin: Extracted from oats, barley, fungi.
- Properties: Viscosity enhancer.
- Uses: Functional foods, beverages.
- Amount: 0.5% - 2% for viscosity enhancement.





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Carrageenan (Iota Carrageenan):

- Origin: Extracted from red seaweed species *Eucheuma denticulatum*.
- Properties: Produces soft, elastic gels. Thermo-reversible.
- Uses: Dairy products, sauces, meat products.
- Amount: 0.2% - 1%



Carrageenan (Kappa Carrageenan):

- Origin: Extracted from red seaweed species *Kappaphycus alvarezii*.
- Properties: Forms firm, brittle gels. Thermo-reversible.
- Uses: Dairy products, desserts, jellies, vegetarian gelatin substitute.
- Amount: 0.5% - 2%

Carrageenan (Lambda Carrageenan):

- Origin: Extracted from red seaweed species *Gigartina pistillata*.
- Properties: Thickener and stabilizer. Doesn't form gels.
- Uses: Dairy products, sauces, soups.
- Amount: 0.1% - 1% for thickening.



Cassia Gum:

- Origin: Extracted from the seeds of the *Cassia tora* plant, a wild crop found in several parts of India.
- Properties: Cassia gum is a galactomannan polysaccharide, similar to guar gum and locust bean gum. It forms high viscosity by increasing the molecular weight. When combined with other hydrocolloids like xanthan gum, it can produce gels.
- Uses: Used as a thickener and stabilizer in the food industry, especially in pet foods. It's also used in dairy products, meat products, and air fresheners.
- Amount: 0.5% - 2% by weight of the liquid



Cellulose Derivatives (Methylcellulose):

- Origin: Derived from plant cell walls.
- Properties: Thermo-reversible gelling agent.
- Uses: Emulsifiers, thickeners, film formers.
- Amount: : 0.2% - 2%

Cellulose Derivatives (Hydroxypropylcellulose):

- Origin: Modified cellulose derivative.
- Properties: Soluble in water, forms clear solutions.
- Uses: Thickener, protective colloid, binder. Amount:
- 0.2% - 1.5%





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Cellulose Derivatives (Microcrystalline Cellulose):

- Origin: Derived from plant cell walls.
- Properties: Used as a texturizer and extender.
- Uses: Tablets, food products to prevent caking.
- Amount: 0.5% - 10% in suspension systems.



Chitosan:

- Origin: Derived from chitin in crustacean shells.
- Properties: Forms films, antimicrobial.
- Uses: Food preservation, wound healing, water purification.
- Amount: 0.1% - 1% for most applications.

Fenugreek Gum:

- Origin: Derived from the seeds of the fenugreek plant (*Trigonella foenumgraecum*).
- Properties: Fenugreek gum, also known as galactomannan, is a natural polysaccharide. It has excellent solubility and forms highly viscous solutions. It also has emulsifying properties.
- Uses: Used as a stabilizer, emulsifier, and thickening agent in food products. It's also recognized for its potential health benefits, including blood sugar regulation and cholesterol reduction, and is used in traditional medicine.
- Amount: 0.2% - 1.5% by weight of the liquid.

Notes: Fenugreek gum can form highly viscous solutions, so it's essential to start with a lower amount and adjust based on the desired viscosity and texture.

Gelatin:

- Origin: Derived from animal collagen.
- Properties: Forms soft, elastic gels.
- Uses: Desserts, gummy candies, pharmaceutical capsules.
- Amount: 1% - 6% depending on desired gel strength.



Gellan Gum:

- Origin: Produced by bacterial fermentation.
- Properties: Forms firm, brittle gels.
- Uses: Desserts, sauces, beverages.
- Amount: 0.1% - 1% for gelling.

Guar Gum:

- Origin: Extracted from guar beans.
- Properties: Thickening agent.
- Uses: Baked goods, dairy products, dressings.
- Amount: 0.1% - 1% for thickening.





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Gum Karaya:

- Origin: Exudate from trees of the genus Sterculia.
- Properties: Water-soluble, used as a thickener and emulsifier.
- Uses: Laxatives, denture adhesives, and food products.
- Amount: 0.5% - 5% for thickening.



High Methoxyl (HM) Pectin:

- Degree of Esterification (DE): Above 50%.
- Properties: Requires a high concentration of sugar and a low pH (acidic conditions) to form gels. The gelation is driven by hydrogen bonding.
- Uses: Traditional jams, jellies, and marmalades.
- Amount: 0.5%- 2%

Inulin:

- Origin: Extracted from chicory root and other plants.
- Properties: Prebiotic, texture enhancer.
- Uses: Dietary supplements, functional foods.
- Amount: 2% - 10% for fiber enrichment.



Konjac (Konnyaku) Gum:

- Origin: Derived from the root of the konjac plant.
- Properties: Forms firm, elastic gels.
- Uses: Vegan gelatin substitute, shirataki noodles.
- Amount: 0.5% - 3% for gelling.

Locust Bean Gum (Carob Gum):

- Origin: Extracted from seeds of the carob tree.
- Properties: Thickening agent.
- Uses: Ice cream, dairy products, baked goods.
- Amount: 0.1% - 1% for thickening.



Low Methoxyl (LM) Pectin:

- Degree of Esterification (DE): Below 50%.
- Properties: Can form gels in the presence of divalent cations, typically calcium. Does not require as much sugar as HM pectin.
- Uses: Reduced-sugar jams, jellies, dairy products, and confectionery.
- Amount: 0.5% - 2%





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Low Methoxyl Amidated (LMA) Pectin:

- Origin: LM pectin that has undergone amidation, a process where some of the carboxyl groups are converted to amide groups.
- Properties: Requires calcium for gelation but is more tolerant to pH and calcium concentration than regular LM pectin.
- Uses: Dairy products like yogurt and desserts, especially when a smooth texture is desired.
- Amount: 0.5% - 2%



Pullulan:

- Origin: Produced by fungal fermentation.
- Properties: Forms elastic films and gels.
- Uses: Edible films, capsules.
- Amount: 0.5% - 5% for film-forming.



Tamarind Gum (Tamarind Kernel Powder):

- Origin: Extracted from the seeds of the tamarind tree (*Tamarindus indica*).
- Properties: Tamarind gum is a complex polysaccharide composed of glucose, xylose, and mannose. It forms a gel-like consistency in water, making it an excellent thickening agent. It also has high stability against heat, acidity, and shear.
- Uses: Used as a thickener, stabilizer, and emulsifier in the food industry, particularly in sauces, ice creams, and beverages. It's also used in the textile industry for sizing and printing.
- Amount: 0.5% - 2.5% by weight of the liquid.

Tara Gum:

- Origin: Extracted from seeds of the tara tree.
- Properties: Thickening agent.
- Uses: Ice cream, dairy products, baked goods.
- Amount: 0.1% - 1% for thickening.



Tragacanth Gum:

- Origin: Sap of the *Astragalus* shrubs.
- Properties: Emulsifier, thickener.
- Uses: Dressings, sauces, confectionery.
- Amount: 0.5% - 5% for thickening and stabilization.

Xanthan Gum:

- Origin: Produced by bacterial fermentation.
- Properties: Thickening and stabilizing agent.
- Uses: Salad dressings, sauces, gluten-free baking.
- Amount: 0.1% - 1% for thickening and stabilization.

It is essential to note that the exact amount of a hydrocolloid can vary based on the specific application, desired texture, other ingredients in the recipe, and the specific brand or grade of the hydrocolloid used. Additionally, always consult the manufacturer's specifications or product datasheet, as different grades or brands might have varying recommendations.

