GUM ARABIC

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SYNONYMS Gum arabic (*Acacia senegal*), gum arabic (*Acacia seyal*), Acacia gum, arabic gum, INS No. 414

DEFINITION Gum arabic is a dried exudate obtained from the stems and branches of *Acacia senegal* (L.) Willdenow or *Acacia seyal* (fam. *Leguminosae*)
Gum arabic consists mainly of high-molecular weight polysaccharides and their calcium, magnesium and potassium salts, which on hydrolysis yield arabinose, galactose, rhamnose and glucuronic acid. Items of commerce may contain extraneous materials such as sand and pieces of bark, which must be removed before use in food.

C.A.S. number 9000-01-5

DESCRIPTION Gum arabic (*A. senegal*) is a pale white to orange-brown solid, which breaks with a glassy fracture. The best grades are in the form of whole, spheroidal tears of varying size with a matt surface texture. When ground, the pieces are paler and have a glassy appearance.
Gum arabic (*A. seyal*) is more brittle than the hard tears of gum arabic (*A. senegal*).

Gum arabic is also available commercially in the form of white to yellowish-white flakes, granules, powder, roller dried, or spray-dried material.

An aqueous solution of 1 g in 2 ml flows readily and is acid to litmus.

FUNCTIONAL USES Emulsifier, stabilizer, thickener

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4) One gram dissolves in 2 ml of water; insoluble in ethanol

Gum constituents (Vol. 4) Proceed as directed under Gum Constituents Identification (FNP 5) using the following as reference standards: arabinose, galactose, mannose, rhamnose, galacturonic acid, glucuronic acid and xylose. Arabinose, galactose, rhamnose and glucuronic acid should be present. Additional spots corresponding to mannose, xylose and galacturonic acid should be absent.

Optical rotation Gum from *A. senegal* : aqueous solutions are levorotatory
Gum from *A. seyal* : aqueous solutions are dextrorotatory
Test a solution of 10 g of sample (dry basis) in 100 ml of water (if necessary, previously filtered through a No. 42 paper or a 0.8 µm millipore

filter), using a 200-mm tube.

PURITY

Loss on drying (Vol. 4)	Not more than 15% (105º, 5 h) for granular and not more than 10% (105º, 4 h) for spray dried material Unground samples should be powdered to pass through a No. 40 sieve and mixed well before weighing
Total ash (Vol. 4)	Not more than 4%
Acid-insoluble ash (Vol. 4)	Not more than 0.5%
Acid-insoluble matter (Vol. 4)	Not more than 1%
Starch or dextrin	Boil a 1 in 50 solution of the sample, cool and add a few drops of Iodine T.S. No bluish or reddish colour should be produced.
Tannin-bearing gums	To 10 ml of a 1 in 50 solution of the sample, add about 0.1 ml of ferric chloride TS. No blackish colouration or blackish precipitate should be formed.
Microbiological criteria (Vol. 4)	*Salmonella* spp.: Negative per test *E. coli:* Negative in 1 g
Lead (Vol. 4)	Not more than 2 mg/kg Determine using an atomic absorption technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4, “Instrumental Methods.”