

NOSB NATIONAL LIST FILE CHECKLIST

PROCESSING

MATERIAL NAME: #12 Gums



NOSB Database Form



References



MSDS (or equivalent)



FASP (FDA)



TAP Reviews from: Joe Montecalvo, Rich
Theuer

**NOSB/NATIONAL LIST
COMMENT FORM
PROCESSING**

Material Name: #12 Gums

Please use this page to write down comments, questions, and your anticipated vote(s).

COMMENTS/QUESTIONS:

1. In my opinion, this material is:

_____ Synthetic _____ Non-synthetic.

2. Should this material be allowed in an "organic food" (95% or higher organic ingredients)? _____ Yes _____ No

(IF NO, PROCEED TO QUESTION 3.)

3. Should this substance be allowed in a "food made with organic ingredients" (50% or higher organic ingredients)? _____ Yes _____ No

Locust Juniperum ☺

TAP REVIEWER COMMENT FORM for USDA/NOSB

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Complete both sides of page. Attach additional sheets if you wish.

This file is due back to us by: Sept 8, 1995

Name of Material: Gums

Reviewer Name: R Theuer

Is this substance Synthetic or non-synthetic? Explain (if appropriate) NON-SYNTHETIC

If synthetic, how is the material made? (please answer here if our database form is blank)

This material should be added to the National List as:

Synthetic Allowed Prohibited Natural

or, Non-synthetic (Allowed as an ingredient in organic food)

Non-synthetic (Allowed as a processing aid for organic food)

or, this material should not be on the National List

Are there any use restrictions or limitations that should be placed on this material on the National List?

CURRENT USES LIMITED BY GOOD MANUFACTURING PRACTICES. GUMS ARE EXPENSIVE. TOO MUCH MEANS

Please comment on the accuracy of the information in the file:

OK

PRODUCT IS TOO THICK

Any additional comments? (attachments welcomed)

✓

Do you have a commercial interest in this material? Yes; No

Signature [Signature]

Date 8/28/95

**Please address the 7 criteria in the Organic Foods Production Act:
(comment in those areas you feel are applicable)**

- (1) **the potential of such substances for detrimental chemical interactions with other materials used in organic farming systems;**

NONE

- (2) **the toxicity and mode of action of the substance and of its breakdown products or any contaminants, and their persistence and areas of concentration in the environment;**

NONE

- (3) **the probability of environmental contamination during manufacture, use, misuse or disposal of such substance;**

SOME, BUT WASTE STREAM CAN BE USED
AS ANIMAL FEED, MULCH, ETC.

- (4) **the effect of the substance on human health;**

OK SAFE (GRAS)

- (5) **the effects of the substance on biological and chemical interactions in the agroecosystem, including the physiological effects of the substance on soil organisms (including the salt index and solubility of the soil), crops and livestock;**

NONE

- (6) **the alternatives to using the substance in terms of practices or other available materials; and**

VARIOUS GUM AND HYDRO COLLOIDS EXIST
USE CHOICE IS GOVERNED BY COST, APPLICATION,
ETC.

- (7) **its compatibility with a system of sustainable agriculture.**

EXCELLENT

TAP REVIEWER COMMENT FORM for USDA/NOSB

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Complete both sides of page. Attach additional sheets if you wish.

This file is due back to us by: Sept 8, 1995

Name of Material: Gums

Reviewer Name: DR. JOE MONTECALVO

Is this substance Synthetic or non-synthetic? Explain (if appropriate)

Synthetic for GUAR and Locust Bean Gum - Non Synthetic for Gum ARABIC
AND CAROB
If synthetic, how is the material made? (please answer here if our database form is blank) See Attached sheet for further information

This material should be added to the National List as:

Synthetic Allowed Prohibited Natural
FOR GUAR, LOCUST AND CAROB

or, Non-synthetic (Allowed as an ingredient in organic food) FOR Gum ARABIC
 Non-synthetic (Allowed as a processing aid for organic food)

or, this material should not be on the National List

Are there any use restrictions or limitations that should be placed on this material on the National List? None

Please comment on the accuracy of the information in the file: not clear - need MORE detailed information on extraction and purification of these gums. I will have more info available at a later date - please contact me.

Any additional comments? (attachments welcomed)

See Attached sheet.

Do you have a commercial interest in this material? Yes; No

Signature Dr. Joe Montecalvo Date 8/22/95

**Please address the 7 criteria in the Organic Foods Production Act:
(comment in those areas you feel are applicable)**

- (1) the potential of such substances for detrimental chemical interactions with other materials used in organic farming systems;**

None

- (2) the toxicity and mode of action of the substance and of its breakdown products or any contaminants, and their persistence and areas of concentration in the environment;**

None

- (3) the probability of environmental contamination during manufacture, use, misuse or disposal of such substance;**

None

- (4) the effect of the substance on human health;**

no data;

- (5) the effects of the substance on biological and chemical interactions in the agroecosystem, including the physiological effects of the substance on soil organisms (including the salt index and solubility of the soil), crops and livestock;**

None

- (6) the alternatives to using the substance in terms of practices or other available materials; and**

None

- (7) its compatibility with a system of sustainable agriculture.**

O.K.

Composition

LOCUIT BEAN
GUM

FROM CAROB FLOUR, ENDOSPERM
CONTAINING PROTEIN & CHOL

Properties

YELLOW-GREEN COLOR,
ODORLESS AND TASTELESS

Manufact.

EXTRACTED FROM
GROUND KERNEL
ENDOSPERM OF TREE
PODS CERATONIA

S.I.S.F.S.

① USFARA COFFEE,
CHOCOLATE AND
COCOA SUBSTITUTE
AND EXTENDER

② Stabilizer, thickener
and binder in foods
and cosmetics

GUM
GUM

COMPOSED OF LINEAR CHAINS OF
(1-4) β -D-MANNOPYRANOSYL
UNITS WITH α -D-GALACTOPYRANOSYL
ATTACHED BY A (1-6) LINKAGE. RATIO
OF D-GALACTOSE TO D-MANNOSE IS 1:2.

SOLUBLE IN COLD AND
HOT H₂O, SOLUTIONS
ARE TASTELESS, ODORLESS
NON-TOXIC. HEAT STABLE

EXTRACTED FROM THE
GROUND ENDOSPERM OF
CYAMOPSIS TETRAGONALOBUS
BY WATER EXTRACTION.

USFARA
STABILIZER AND
THICKENER FOR
CHEESE, SAID
DRESSINGS, ICE CREAM
AND SOUPS.
HASTO & THE
THICKENING POWER OF
STARCH

GUM
ARABIC

POLYSACCHARIDE
COMPOSED OF ARABINOSE,
GALACTOSE, RHAMNOSSE AND
GLYCURONIC ACID.

SOLUBLE IN WATER,
THICKENER, EMULSIFIER

EXTRACTED FROM THE DRIED
GUMMY EXUDATION FROM
THE STEMS AND BRANCHES OF
THE ACACIA SENEGAL

EMULSIFIER,
THICKENER,
IN CANDY AND
CONFECTIONARY
PRODUCTS - IN
MANY INDUSTRIES
SPRAY DRIED
STABLE FLAVOR
COMPOUNDS - i.e.
FOR PACKAGED DRY
GOODS, PUDDINGS,
DESSERTS, CAKE MIXES

Identification

Common Name	Gums, Acacia, Guar etc.	Chemical Name	
Other Names	Gum Arabic, Locust Bean Gum, Guar Gum, Carob Bean gum		
Code #: CAS	9000-30-0 (Guar); 9000-40-2 (Locust)	Code #: Other	
N. L. Category	Non-agricultural	MSDS	<input type="radio"/> yes <input checked="" type="radio"/> no

Chemistry

Family

Composition	polysaccharides. Guar (<i>Cyamopsis tetragonolobus</i>) and locust bean (<i>Ceratonia siliqua</i>) consist of galactan and mannan units. Gum arabic is an exudate from the stem of the acacia tree.
Properties	Guar is cold water soluble so can be used in cold processes. Also stable at boiling temperatures over a wide pH range. Locust bean is not fully soluble until 180 degrees F, so it used for hot processes. Both are slightly cloudy and very viscous in solution.
How Made	Guar: seeds are dehusked and seed germs removed (sometimes the hull is loosened with 55% sulfuric acid). The endosperm portion, called splits, are swollen in water, dried, and milled by differential grinding to separate the endosperm from the germ. Locust bean gum is the same except not swollen in water. It can sometimes be pre-treated with a dilute alkali. An alternate procedure involves further purification by dispersing in boiling water, filtering, and recovering the gum by evaporation. Gum arabic is collected from the acacia tree which grows in Africa, India and the southern U.S.

Use/Action

Type of Use	Processing
Specific Use(s)	Guar and Locust bean: Used in dairy (especially ice cream), baked goods, condiments and sauces, cake mixes, puddings and fillings, beverages. Gum arabic is an emulsifier, surfactant, stabilizer, texturizer and binder used in candies, jellies, and baked goods.
Action	functions as a viscosifier, water binder, texturizer, and to improve freeze-thaw stability of the finished product. Synergistic with xanthan gum and carrageenan to improve binding properties.
Combinations	

Status

OFPA

N. L. Restriction

EPA, FDA, etc FDA-GRAS

Directions

Safety Guidelines

State Differences

Historical status

International status

OFPA Criteria

2119(m)1: chemical interactions Not Applicable

2119(m)2: toxicity & persistence Not Applicable

2119(m)3: manufacture & disposal consequences
biodegradeable.

2119(m)4: effect on human health

2119(m)5: agroecosystem biology Not Applicable

2119(m)6: alternatives to substance
xanthan gum, carrageenan; many gums substitute for each other.

2119(m)7: Is it compatible?

References

Mar B. Nieto, Ph. D. 1995. written communication.

Boyd Foster, Arrowhead Mills, 1994. written communication.

Glicksman, M., Food Hydrocolloids. Vol. III; CRC Press, Inc., Boca Raton, FL

Furia, T.E. (ed.). CRC Handbook of Food Additives. 2nd ed. Cleveland: the Chemical Rubber Co., 1972.

