NOSB NATIONAL LIST
FILE CHECKLIST

PROCESSING

MATERIAL NAME: Agar-agar
CATEGORY: Non-agricultural
Complete?: 3/16

√ NOSB Database Form
√ References
√ MSDS (or equivalent)
√ FASP (FDA)

Date file mailed out: 1/8/95

√ TAP Reviews from: Steve Taylor
      Rich Theuer

Supplemental Information:

MISSING INFORMATION: ________________________________
NOSB/NATIONAL LIST
COMMENT FORM/BALLOT

Use this page to write down comments and questions regarding the data presented in the file of this National List material. Also record your planned opinion/vote to save time at the meeting on the National List.

Name of Material: Aggr Aggr

Type of Use: ___ Crops; ___ Livestock; ✔ Processing

TAP Review by:
1. S. Taylor
2. R. Theuer
3. 

Comments/Questions:

________________________________________________________________________

My Opinion/Vote is:

________________________________________________________________________

Signature ___________________________ Date _______________
USDA/TAP REVIEWER
COMMENT FORM

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. Attach additional sheets if you wish.

This file is due back to us within 30 days of: JAN 7

Name of Material: Agar-Agar

Reviewer Name: Steve Taylor

Is this substance Natural or Synthetic? Explain (if appropriate)
Natural - Derived from seaweed

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

This material should be added to the National List as:

___ Synthetic Allowed ___ Prohibited Natural

or, ___ This material does not belong on the National List because:

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

Agar is extracted from seaweed. The method of extraction and materials used may be of concern, but

Any additional comments or references? likely variable.

Signature Steve Taylor Date 3-5-95
Material: Agar (Agar-agar)
Reviewer: Richard C. Theuer

Agar, also called agar-agar, is a natural gum extracted from certain marine algae belonging to the class Rhodophyceae (red seaweed). The seaweed is collected (high labor input), than dried and bleached in the sun. The agar is extracted with hot water, followed by freezing for purification.

COMMENTS RE SECTION 2119(m) CRITERIA:
1. Agar comes from seaweed, a renewable resource, and is processed simply, so it is compatible with sustainable agriculture. Except for certain applications (icings, culture media) which justify the high cost of agar, it has been replaced by other more economical gums.
2. The amount of agar used in foods is "self-limiting" and restricted by regulation [21CFR184.1115(c)]. It is an expensive thickener, so the textural requirements of the food and economics limit use to the practical minimum.
3. Agar has been used in foods for about 300 years. It is GRAS.

The following natural substance should be allowed as an ingredient in organic foods. It should not be added to the National List of natural substances prohibited for use as ingredients or processing aids in Organic Food:

agar ("agar-agar").

12 Mar 1995
Identification

Common Name: Agar-agar
Other Names: Agar
Code #: CAS: Non-agricultural

Chemical Name
Code #: Other: Yes
MSDS: Yes

Chemistry

A dried hydrophilic, colloidal polygalactoside.

Composition

Properties: Commerically available in bundles consisting of thin, membranous agglutinated strips, or in cut, flaked, granulated, or powdered forms. White to pale yellow in color, slight characteristic odor, and mucilaginous taste. Insoluble in cold water but soluble in boiling water.

How Made: Extracted from Gledium cartilagineum (L.) Gaillon (Fam. Gelidiaceae), Gracilaria confervoides (L.) Greville (Fam. Sphaerococcaceae), and related red algae (Class Rhodophyceae). Seaweed is collected, dried and bleached in the sun. Extraction is done with hot water, followed by freezing for purification.

Use/Action

Type of Use: Processing
Specific Use(s): Stabilizer, thickener, emulsifier. Used as a media for culturing micro-organisms.
Action
Combinations

Status

OFPA
N. L. Restriction
EPA, FDA, etc: FDA-GRAS

Directions
Safety Guidelines
State Differences
Historical Status: Used in foods for about 300 years.
International Status: Allowed by IFOAM, European Union and Codex.
NOSB Materials Database

OFPA Criteria

2119(m)1: chemical interactions Not Applicable
2119(m)2: toxicity & persistence Not Applicable
2119(m)3: manufacture & disposal consequences
none likely because of natural production method.

2119(m)4: effect on human health
none

2119(m)5: agroecosystem biology Not Applicable
2119(m)6: alternatives to substance
Other seaweed derivatives including alginates, carrageenan; gelatin; certain modified starches; modified celluloses.
More expensive than many other gums which tends to limit its use.

2119(m)7: Is it compatible?

References

AU: Chen, G-C
Ti: Agar-agar manufacturing [from Gelidium and Gracilaria seaweeds]
CN: DNAI 414.9-J66

AU: Rao, A-V; Bekheet, I-A
Ti: Preparation of agar-agar from the red seaweed Pterocladiad capillacea off the coast of Alexandria, Egypt
CN: DNAI 448.3-AP5

AU: Toda, J.; Wada, T.; Konno, A.
Ti: Sensory evaluation of textural properties of gelatin, agar-agar and egg-white gels.
CN: DNAI 385-AG8

AU: Goto, F.
Ti: The comparison of block-agar gel and powder-agar gel. 2. Study on some characteristic tastes of Japanese cake prepared by mixture of bean-jam and agar-agar by sensory test and objective methods.
CN: DNAI TX1.K3
MSDS for AGAR AGAR

SECTION I - Product Identification

PRODUCT NAME: AGAR AGAR
FORMULA: FORMULA WT: .00
CAS NO.: 09002-18-0 NIOSH/RTECS NO.: AW7950000
COMMON SYNONYMS: POLYSACCHARIDE COMPLEX
PRODUCT CODES: A434

Precautionary Labeling

BAKER SAF-T-DATA(TM) SYSTEM
HEALTH - 0
FLAMMABILITY - 1
REACTIVITY - 0
CONTACT - 0
LABORATORY PROTECTIVE EQUIPMENT: SAFETY GLASSES; LAB COAT
PRECAUTIONARY LABEL STATEMENTS
DURING USE AVOID CONTACT WITH EYES, SKIN, CLOTHING. WASH THOROUGHLY AFTER HANDLING. WHEN NOT IN USE KEEP IN TIGHTLY CLOSED CONTAINER.

SECTION II - Hazardous Components

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>%</th>
<th>CAS NO.</th>
</tr>
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<tbody>
<tr>
<td>NOT APPLICABLE</td>
<td></td>
<td></td>
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SECTION III - Physical Data

BOILING POINT: N/A VAPOR PRESSURE(MM HG): N/A
MELTING POINT: N/A VAPOR DENSITY(AIR=1): N/A
SPECIFIC GRAVITY: N/A EVAPORATION RATE: N/A
(H2O=1) (BUTYL ACETATE=1)
SOLUBILITY(H2O): NEGLIGIBLE (LESS THAN 0.1 %) % VOLATILES BY VOLUME: 0
APPEARANCE & ODOR: WHITE CRYSTALLINE POWDER WITH NO ODOR.

SECTION IV - Fire and Explosion Hazard Data

FLASH POINT: N/A
FIRE EXTINGUISHING MEDIA
USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.
SPECIAL FIRE-FIGHTING PROCEDURES
FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE TOXIC GASES PRODUCED: CARBON MONOXIDE, CARBON DIOXIDE

SECTION V - Health Hazard Data

TOXICITY: LD50 (ORAL-RAT)(G/KG) - 11
LD50 (ORAL-MOUSE)(G/KG) - 16
EFFECTS OF OVEREXPOSURE
NO EFFECTS OF OVEREXPOSURE WERE DOCUMENTED.
EMERGENCY AND FIRST AID PROCEDURES
INGESTION: IF SWALLOWED AND THE PERSON IS CONSCIOUS, IMMEDIATELY GIVE
LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.
INHALATION: IF A PERSON BREATHES IN LARGE AMOUNTS, MOVE THE EXPOSED
PERSON TO FRESH AIR.
EYE CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15
MINUTES. GET MEDICAL ATTENTION.
SKIN CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

SECTION VI - Reactivity Data

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: MOISTURE
INCOMPATIBLES: STRONG OXIDIZING AGENTS
DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE

SECTION VII - Spill and Disposal Procedures

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
WEAR SUITABLE PROTECTIVE CLOTHING. CAREFULLY SWEEP UP AND REMOVE.
DISPOSAL PROCEDURE
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL
ENVIRONMENTAL REGULATIONS.

SECTION VIII - Protective Equipment

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION
TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.
RESPIRATORY PROTECTION: NONE REQUIRED WHERE ADEQUATE VENTILATION
CONDITIONS EXIST. IF AIRBORNE CONCENTRATION IS
HIGH, USE AN APPROPRIATE RESPIRATOR OR DUST MASK.
EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, PROPER GLOVES ARE
RECOMMENDED.

SECTION IX - Storage and Handling Precautions

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE
SPECIAL PRECAUTIONS
KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE
AREA.

SECTION X - Transportation Data and Additional Information

DOMESTIC (D.O.T.)
PROPER SHIPPING NAME CHEMICALS, N.O.S.
INTERNATIONAL (I.M.O.)
PROPER SHIPPING NAME CHEMICALS, N.O.S.

(TM) and (R) : Registered Trademarks
N/A = Not Applicable OR Not Available
The information published in this Material Safety Data Sheet has been compiled from our experience and
data presented in various technical publications. It is the user’s responsibility to determine the suitability
of this information for adoption of necessary safety precautions. We reserve the right to revise Material
Safety Data Sheets periodically as new information becomes available.
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X 4C:  LOWEST EFFECT LEVEL OBSERVED IN ALL AVAILABLE STUDIES

\[ \text{DUDY: } 31 \quad \text{COMPLETENESS: B} \quad \text{RANKING FACTOR: } 5.969E-5 \]
\[ \text{SPECIES: MOUSE} \quad \text{LEL: } >7500 \text{ MG/KG BW/DAY} \]
\[ \text{EFFECTS: NO EFFECTS} \]
\[ \text{MENTS: HIGHEST DOSE TESTED} \quad \text{NTP STUDY} \]

X 6:  HIGHEST OBSERVED NO-EFFECT LEVEL IN SPECIES OF BOX 4C

\[ \text{DUDY: } 31 \quad \text{COMPLETENESS: B} \quad \text{LEL: } > \text{ MG/KG BW/DAY} \]
\[ \text{SPECIES: MOUSE} \quad \text{HNEL: } 7500 \text{ MG/KG BW/DAY} \]
\[ \text{EFFECTS: NO EFFECTS} \]
\[ \text{MENTS: NTP STUDY} \]

X 7:  ACUTE TOXICITY INFORMATION

\[ \text{DUDY: } 22 \quad \text{SOURCE: GRM 000003 6:643} \]
\[ \text{SPECIES: RAT} \quad \text{YEAR: 1973} \]
\[ \text{LESD 20 LD50 = } >5000 \text{ MG/KG} \]
\[ \text{LESD 25 LD50 = } >2500 \text{ MG/KG} \]

\[ \text{DUDY: } 21 \quad \text{SOURCE: GRM 000003 6:641} \]
\[ \text{SPECIES: MOUSE} \quad \text{YEAR: 1973} \]
\[ \text{LESD 25 LD50 = } >2500 \text{ MG/KG} \]

\[ \text{DUDY: } 23 \quad \text{SOURCE: GRM 000003 6:645} \]
\[ \text{SPECIES: HAMSTER} \quad \text{YEAR: 1973} \]
\[ \text{LESD 50 = } 6100 \text{ MG/KG BW} \]

\[ \text{DUDY: } 24 \quad \text{SOURCE: GRM 000003 6:647} \]
\[ \text{SPECIES: RABBIT} \quad \text{YEAR: 1973} \]
\[ \text{LESD 50 = } 5800 \text{ MG/KG BW} \]