NOSB NATIONAL LIST
FILE CHECKLIST

PROCESSING

MATERIAL NAME: **#3 Calcium Carbonate**

✓ **NOSB Database Form**

✓ **References**

✓ **MSDS (or equivalent)**

✓ **FASP (FDA)**

✓ **TAP Reviews from:** **Joe Montecalvo, Rich Theuer**

NOSB/NATIONAL LIST
COMMENT FORM
PROCESSING

Material Name: #3 Calcium Carbonate

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

COMMENTS/QUESTIONS:

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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

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: August 8

Name of Material: Calcium Carbonate

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?

NO

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

O/K

Any additional comments? (attachments welcomed)

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

Signature R. Theuer **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;

USED NON-LIMESTONE

(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;

NO ISSUE

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

MINING HAS ENVIRONMENTAL DRAWBACKS

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

SAFE FOR FOOD USE

DUST REQUIRES MASK. ~~OR BE~~

(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;

GOOD FOR MOST SOILS

(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.

YES

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: August 8

Name of Material: Calcium Carbonate

Reviewer Name: DR. JOE MONTEALVO

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

Synthetic

If synthetic, how is the material made? (please answer here if our database form is blank) Exists in nature as the minerals Aragonite, Calcite and Vaterite - 98-99% pure.

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? None.

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

Any additional comments? (attachments welcomed)

- Allowed to remove acidity of wines; used in Antacids and Calcium Supplements.

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

Signature [signature] **Date** 7/30/95

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;

- taken as CA. supplement

(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;

not known.

(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.

good

NOSB Materials Database

Identification

Common Name	**Calcium carbonate**	**Chemical Name**	
Other Names	Precipitated calcium carbonate, limestone, marble, calcite, chalk		
Code #: CAS	471-34-1	**Code #: Other**	NIOSH: EV9580000
N. L. Category	Non-agricultural	**MSDS**	◉ yes ○ no

Chemistry

Family	
Composition	$CaCO_3$
Properties	A fine, white, microcrystalline powder which is stable in air, colorless and tasteless. Practically insoluble in water and alcohol.
How Made	mined, ground, screened.

Use/Action

Type of Use	Processing
Specific Use(s)	
Action	Alkali; nutrient; dietary supplement; dough conditioner; firming agent; yeast food.
Combinations	

Status

OFPA	
N. L. Restriction	
EPA, FDA, etc	FDA-GRAS
Directions	
Safety Guidelines	
State Differences	
Historical status	
Internationl status	

OFPA Criteria

2119(m)1: chemical interactions Not Applicable

2119(m)2: toxicity & persistence Not Applicable

2119(m)3: manufacture & disposal consequences

2119(m)4: effect on human health

2119(m)5: agroecosystem biology Not Applicable

2119(m)6: alternatives to substance

2119(m)7: Is it compatible?

References

see attached.

CALCIUM CARBONATE REFERENCES

AU: Harmayani,-E.; Sofos,-J.N.; Schmidt,-G.R.
TI: Fate of Listeria monocytogenes in raw and cooked ground beef with meat processing additives.
SO: Int-J-Food-Microbiol. Amsterdam : Elsevier Science Publishers, B.V. May 1993. v. 18 (3) p. 223-232.
CN: DNAL QR115.I57
AB: The effect of sodium lactate (1.8% w/w), sodium erythorbate (0.1% w/w), kappa-carrageenan (1% w/w), and the alginate meat binder (0.4% w/w, sodium alginate; 0.6% w/w lactic acid; and 0.075% w/w calcium carbonate) on Listeria monocytogenes survival and growth was determined in raw and cooked ground beef stored aerobically at 4 degrees C. Cooking meat with initial inoculum levels of 6.52 to 7.03 L. monocytogenes log CFU/g to 65 degrees C resulted in lower destruction (0.56 and 1.18 log CFU/g) in samples with added alginate meat binder and kappa-carrageenan, respectively, compared to the control. Survivors (2.11-3.73 log CFU/g) decreased initially and then increased slightly, but not significantly (P > 0.05), during storage (4 degrees C, 6 days) of the cooked products.

AU: Yen,-L.C.; Sofos,-J.N.; Schmidt,-G.R.
TI: Destruction of Listeria monocytogenes by heat in ground pork formulated with kappa-carrageenan, sodium lactate and the algin/calcium meat binder.
SO: Food-Microbiol. London : Academic Press. Sept 1992. v. 9 (3) p. 223-230.
CN: DNAL QR115.F66
AB: Uncured or cured ground pork (15% fat) was inoculated with a composite of nine strains of Listeria monocytogenes (10(7)-10(8) cfu g-1) and mixed with kappa-carrageenan (1%) or sodium lactate (3% of a 60% solution). The meat curing-mixture consisted of 2.5% sodium chloride, 1% dextrose, 0.4% sodium phosphates, 0.0156% sodium nitrite and 0.055% sodium erythorbate. Uncured ground pork was also mixed with the algin/calcium meat binder (0.4% sodium alginate, 0.075% calcium carbonate and 0.6% encapsulated lactic acid/calcium lactate). The algin/calcium meat binder did not affect the extent of destruction of L. monocytogenes by heat.

AU: Baker,-R.A.; Crandall,-P.G.; Davis,-K.C.; Wicker,-L.
TI: Calcium supplementation and processing variable effects on orange juice quality.
SO: J-Food-Sci-Off-Publ-Inst-Food-Technol. Chicago, Ill. : The Institute. Sept/Oct 1991. v. 56 (5) p. 1369-1371.
CN: DNAL 389.8-F7322
AB: Untreated, pectinesterase treated, low pulp, and pectinase treated orange juices were fortified to 20% RDA of calcium with calcium carbonate or calcium phosphate/lactate (75/25). Neither calcium supplement adversely affected flavor, cloud density, settling pulp, or viscosity in untreated, low pulp, or pectinase treated juices. PME exposed orange juice held 4 hr before pasteurization and calcium supplementation had less cloudy density, increased viscosity and more settling pulp. Calcium carbonate fortified PME exposed and pectinase treated juices had lower scores, while calcium phosphate suspensions caused slightly lower color scores of all juices.

MSDS for CALCIUM CARBONATE

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: CALCIUM CARBONATE
FORMULA: CACO3 FORMULA WT: 100.09
CAS NO.: 471-34-1 NIOSH/RTECS NO.: EV9580000
COMMON SYNONYMS: LIMESTONE; MARBLE; CALCITE; CHALK; CARBONIC ACID
PRODUCT CODES: 5178,4485,5152,1294,1301,1300,4918,1288
EFFECTIVE: 10/22/86 REVISION #02

PRECAUTIONARY LABELLING BAKER SAF-T-DATA(TM) SYSTEM
HEALTH - 0 NONE
FLAMMABILITY - 0 NONE
REACTIVITY - 0 NONE
CONTACT - 1 SLIGHT
HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).
LABORATORY PROTECTIVE EQUIPMENT: SAFETY GLASSES; LAB COAT
PRECAUTIONARY LABEL STATEMENTS
CAUTION MAY CAUSE IRRITATION
MAY BE HARMFUL IF SWALLOWED
DURING USE AVOID CONTACT WITH EYES, SKIN, CLOTHING. WASH THOROUGHLY AFTER HANDLING. WHEN NOT IN USE KEEP IN TIGHTLY CLOSED CONTAINER.
SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

2 - HAZARDOUS COMPONENTS

COMPONENT	%	CAS NO.
CALCIUM CARBONATE	90-100	471-34-1

3 - PHYSICAL DATA

BOILING POINT: N/A VAPOR PRESSURE(MM HG): N/A
MELTING POINT: 825 C (1517 F) VAPOR DENSITY(AIR=1): N/A
SPECIFIC GRAVITY: 2.83 EVAPORATION RATE: N/A
(H2O=1) (BUTYL ACETATE=1)
SOLUBILITY(H2O): NEGLIGIBLE (LESS THAN 0.1 %) % VOLATILES BY VOLUME: 0
APPEARANCE & ODOR: GRAY GRANULAR STONES.

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP: N/A
FLAMMABLE LIMITS: UPPER - N/A % LOWER - 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: OXIDES, CARBON MONOXIDE, CARBON DIOXIDE

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5 - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE (TLV/TWA): 10 MG/M3 (PPM)
CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO
EFFECTS OF OVEREXPOSURE
DUST MAY IRRITATE NOSE AND THROAT.
INHALATION OF DUST MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT.
CONTACT CAN CAUSE EYE IRRITATION.
INGESTION MAY CAUSE GASTROINTESTINAL PAIN.
TARGET ORGANS: EYES, SKIN
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE IDENTIFIED
ROUTES OF ENTRY: INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT
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. GET MEDICAL ATTENTION.
EYE CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.
SKIN CONTACT: IMMEDIATELY WASH WITH PLENTY OF SOAP AND WATER FOR AT LEAST 15 MINUTES.

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6 - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
EMERGENCY AND FIRST AID PROCEDURES
CONDITIONS TO AVOID: HEAT
INCOMPATIBLES: STRONG ACIDS, FLUORINE, ALUM, AMMONIUM SALTSOSED
DECOMPOSITION PRODUCTS: OXIDES, CARBON MONOXIDE, CARBON DIOXIDE EAST 15

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7 - 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 15 MINUTES.
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS

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8 - PROTECTIVE EQUIPMENT

VENTILATION:O AVOID: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.
INCOMPATIBLES: STRONG ACIDS, FLUORINE, ALUM, AMMONIUM SALTSOSED
RESPIRATORY PROTECTION A RESPIRATOR WITH DUST/MIST FILTER IS RECOMMENDED.
DECOMPOSITION PRODUCTS: IF AIRBORNE CONCENTRATION EXCEEDS TLV, A SELF-CONTAINED BREATHING APPARATUS IS ADVISED.
EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, PROPER GLOVES ARE RECOMMENDED.

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9 - STORAGE AND HANDLING PRECAUTIONS

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

DCNUM=1790

U.S. FOOD AND DRUG ADMINISTRATION
FOOD ADDITIVE SAFETY PROFILE

CALCIUM CARBONATE

AS#:	000471341	HUMAN CONSUMPTION:	175.1412	MG/KG BW/DAY/PERSON
ASP#:	1790	MARKET DISAPPEARANCE:	206666666.666LBS/YR	
YPE:	ASP	MARKET SURVEY:	87	
AS#:	0038	JECFA:	NL	
EMA#:		JECFA ADI:		MG/KG BW/DAY/PERSON
RAS#:		JECFA ESTABLISHED:	1965	
		LAST UPDATE:	931015	
W:	100.09	DENSITY:	LOGP:	

TRUCTURE CATEGORIES: A7

OMPONENTS:

YNONYMS:
CALCIUM CARBONATE, PRECIPITATED
PRECIPITATED CHALK
CARBONIC ACID CALCIUM SALT (1:1)
CALCIUM CARBONATE (CACO3)

HEMICAL FUNCTION: G

ECHNICAL EFFECT:
PROCESSING AID
PH CONTROL AGENT
MASTICATORY SUBSTANCE
FORMULATION AID
NUTRIENT SUPPLEMENT
ANTICAKING AGENT OR FREE-FLOW AGENT
DRYING AGENT
HUMECTANT
LEAVENING AGENT
LUBRICANT OR RELEASE AGENT

FR REG NUMBERS:

184.1191	137.105	182.5191
137.350	169.115	137.155
137.165	137.160	137.170
137.175	137.180	137.185
176.170		

INIMUM TESTING LEVEL: 3

OMMENTS: STUDY 1 AND 2 FROM SCOGS-26

)CNUM=1790

)X 7: ACUTE TOXICITY INFORMATION

TUDY: 6 SOURCE: FOOD ADDITIVES HANDBOOK (R.J. LEWIS)
PECIES: RAT YEAR: 1989
LD50: 6450 MG/KG BW
)MMENTS:

)X 9: ORAL TOXICITY STUDIES (OTHER THAN ACUTE)

TUDY: 1 COMPLETENESS: SOURCE: BRIT J NUTR 11:127-133
(PE: SHORT TERM YEAR: 1957
PECIES: RAT LEL: 300 MG/KG BW/DAY
JRATION: 70 DAYS HNEL:
FFECTS: BODY WEIGHT DECREASE
FOOD CONSUMPTION DECREASE
ORGAN WEIGHT INCREASE
TES: HEART
)MMENTS: RATS WERE ANEMIC AUTHOR SUGGESTS CALCIUM INTERFERED WITH ABSORPTION

TUDY: 2 COMPLETENESS: SOURCE: BRIT J NUTR 6:265-280
(PE: REPRODUCTION YEAR: 1952
PECIES: MOUSE LEL: 3000 MG/KG BW/DAY
JRATION: HNEL: 1500 MG/KG BW/DAY
FFECTS: PUP WEIGHT AT WEANING DECREASE
REPRODUCTIVE TOXICITY
PUP MORTALITY INCREASE
CELLULAR HYPERTROPHY
ORGAN WEIGHT DECREASE
TES: HEART THYMUS
)MMENTS: HYPERTROPHY OF THE HEART IN WEANLINGS
DECREASED THYMUS WEIGHT IN WEANLINGS
NOT ENTERED INTO BOX 8

)X 3: GENETIC TOXICITY STUDIES

TUDY: 3 COMPLETENESS: SOURCE:
YPE: YEAR:
PECIES: LEL: MG/KG BW/DAY
JRATION: HNEL:
FFECTS:
ELLS:
)MMENTS: