NOSB NATIONAL LIST
FILE CHECKLIST

PROCESSING

MATERIAL NAME: **#5 Calcium Phosphates**

✓ **NOSB Database Form**

✓ **References**

✓ **MSDS (or equivalent)**

✓ **FASP (FDA)**

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

NOSB/NATIONAL LIST
COMMENT FORM
PROCESSING

Material Name: #5 Calcium Phosphates

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

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 Phosphates

Reviewer Name: DR. JOE MONTECALVO

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

Synthetic for Mono, Di And tribasic

If synthetic, how is the material made? (please answer here if our database form is blank) Manufactured by treating pulverized phosphate Rock with H_2SO_4 OR H_3PO_4 — From Merk Index 11th Ed.

Sulfuric Acid Phosphoric Acid

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? As specified.

Please comment on the accuracy of the information in the file: good — but Should also indicate that there is a tribasic form.

Any additional comments? (attachments welcomed)

None.

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;

little.

(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;

Low.

(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;

NONE

(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.

OK.

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 Phosphates

Reviewer Name: R THEUER

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)

CALCIUM HYDROXIDE (SYNTHETIC) IS NEUTRALIZED WITH PHOSPHORIC ACID (SYNTHETIC)

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:

OK

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;

NO ISSUE

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

CALCIUM DERIVES FROM LIMESTONE OR OYSTER SHELLS PHOSPHORUS FROM MINED PHOSPHATES. MINING IS NORMALLY ENVIRONMENTALLY DAMAGING

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

POSITIVE - BOTH CALCIUM AND PHOSPHORUS ARE ESSENTIAL NUTRIENT MINERALS

(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;

POSITIVE

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

FOR LEAVENING, SOME ALTERNATIVES BUT THIS IS A STANDARD AND CRITICAL COMPONENT OF BAKING POWDER, ALUMINUM-FREE.

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

POSITIVE

NOSB Materials Database

Identification

Common Name **Calcium Phosphates** **Chemical Name**

Other Names Dicalcium Phosphate, Monocalcium Phosphate; Calcium Phosphate, Monobasic, Dibasic, Tribasic

Code #: CAS 07758-23-8 **Code #: Other**

N. L. Category Synthetic Allowed **MSDS** ◉ yes ○ no

Chemistry

Family

Composition Ca $HPO_4.2H_2O$ -Dibasic; Ca $(H_2PO_4)_2$ - Monobasic

Properties Can be either anhydrous or contain one to three molecules of water of hydration. White, odorless, tasteless powder that is stable in air. Dibasic and tribasic are practically insoluble in water, but are readily soluble in dilute hydrochloric and nitric acids. Monobasic is sparingly soluble in water.

How Made

Processing

Use/Action

Type of Use

Specific Use(s) Leavening agent; dough conditioner; nutrient; yeast food (all). In addition, monobasic is buffer; firming agent; sequestrant. In addition, tribasic is anticaking agent; buffer.

Action

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

AU: El-Gazzar,-F.E.; Marth,-E.H.
TI: Ultrafiltration and reverse osmosis in dairy technology: a review.
SO: J-Food-Prot. Ames, Iowa : International Association of Milk, Food, and Environmental Sanitarians. Oct 1991. v. 54 (10) p. 801-809.
CN: DNAL 44.8-J824
AB: Ultrafiltration and reverse osmosis processes can be useful in the dairy foods industry. Lactic cultures are slow to reduce the pH of retentate because of its increased buffering capacity since concentrated calcium phosphate and proteins are present. The principal advantage of using ultrafiltered milk for conversion into such cheeses as Cheddar, cottage, Havarti, Feta, brick, Colby, and Domiati is an increase in yield of product. Additional benefits claimed for use of ultrafiltered milk in cheese making include reduction in costs of energy, equipment, and labor; improved consistency of cheese flavor; and possible production of new byproducts.

AU: Wong,-N.P.; LaCroix,-D.E.
TI: Biological availability of calcium in dairy products.
SO: Nutr-Rep-Int. Los Altos, Calif., Geron-X. May 1980. v. 21 (5) p. 673-680. ill., charts.
CN: RC620.A1N8
AB: Abstract: Total femur calcium was measured to evaluate the adequacy of different dairy products as calcium sources for rats. The bioavailability of calcium in natural food products depends upon the chemical form of the contained calcium; calcium in ionic complexes is not as biologically available as calcium in the form of colloidal calcium phosphate or calcium caseinate. Some dairy products may therefore be better calcium sources than others.

AU: Roeper,-J
TI: High-calcium phosphate casein products for use in food systems
SO: N-Z-J-Dairy-Sci-Technol, Mar 1976, 11 (1): 62-64.
CN: DNAL SF221.N4

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: CALCIUM PHOSPHATE, MONOBASIC, MONOHYDRATE
FORMULA: CA(H2PO4)2 H2O FORMULA WT: 252.07
CAS NO.: 07758-23-8 PRODUCT CODES: 1426
COMMON SYNONYMS: CALCIUM DIHYDROGEN PHOSPHATE, MONOHYDRATE;
EFFECTIVE: 03/11/86 REVISION #01

PRECAUTIONARY LABELLING BAKER SAF-T-DATA(TM) SYSTEM
HEALTH - 0 NONE
FLAMMABILITY - 0 NONE
REACTIVITY - 1 SLIGHT
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
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.
NOT APPLICABLE		

3 - PHYSICAL DATA

BOILING POINT: N/A VAPOR PRESSURE(MM HG): N/A
MELTING POINT: N/A VAPOR DENSITY(AIR=1): N/A
SPECIFIC GRAVITY: 2.22 (H2O=1) EVAPORATION RATE: N/A (BUTYL ACETATE=1)
SOLUBILITY(H2O): MODERATE (1 TO 10 %) % VOLATILES BY VOLUME: 0
APPEARANCE & ODOR: WHITE CRYSTALLINE POWDER.

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.

5 - HEALTH HAZARD DATA

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO
EFFECTS OF OVEREXPOSURE: NO EFFECTS OF OVEREXPOSURE WERE DOCUMENTED.

TARGET ORGANS: NONE IDENTIFIED
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE IDENTIFIED
ROUTES OF ENTRY: NONE INDICATED

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.

6 - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE DOCUMENTED
INCOMPATIBLES: STRONG ACIDS

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
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

8 - 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 EXIST. IF AIRBORNE CONCENTRATION IS HIGH, USE AN APPROPRIATE RESPIRATOR OR DUST MASK.

EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, PROPER GLOVES ARE RECOMMENDED.

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 AREA.

10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

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

DCNUM=1814

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

CALCIUM PHOSPHATE, MONOBASIC

AS#:	007758238	HUMAN CONSUMPTION:	5.3813	MG/KG BW/DAY/PERSON
ASP#:	1814	MARKET DISAPPEARANCE:	6350000.000	LBS/YR
TPE:	ASP	MARKET SURVEY:	87	
AS#:	0049	JECFA:	FU-C	
EMA#:		JECFA ADI:	70	MG/KG BW/DAY/PERSON
LAS#:		JECFA ESTABLISHED:	1983	
		LAST UPDATE:	931015	

W: 234.06 DENSITY: LOGP:

STRUCTURE CATEGORIES: A7

COMPONENTS:

SYNONYMS:
CALCIUM BIPHOSPHATE
MONOCALCIUM PHOSPHATE
MONOCALCIUM PHOSPHATE, ANHYDROUS
PHOSPHORIC ACID, CALCIUM SALT (2:1)
MONOBASIC CALCIUM PHOSPHATE
CALCIUM PHOSPHATE (1:2)
CALCIUM DIHYDROGEN PHOSPHATE
CALCIUM TETRAHYDROGEN PHOSPHATE
MONOCALCIUM ORTHOPHOSPHATE
MONOCALCIUM PHOSPHATE, MONOBASIC
PHOSPHATE, ANHYDROUS MONOCALCIUM

CHEMICAL FUNCTION: G

TECHNICAL EFFECT:
LEAVENING AGENT
DOUGH STRENGTHENER
FLOUR TREATING AGENT
MALTING OR FERMENTING AID
PH CONTROL AGENT
NUTRIENT SUPPLEMENT
FIRMING AGENT
SEQUESTRANT
STABILIZER OR THICKENER

FR REG NUMBERS:

182.5217	182.6215	182.1217
137.175	150.161	137.180
150.141	136.110	155.200
137.165	137.270	136.115
136.130	136.160	136.165
136.180	182.8217	175.300

)CNUM=1814

[NIMUM TESTING LEVEL: 3

)MMENTS: STUDIES 1 AND 2 FROM SCOGS-32
DATA INSUFFICIENT FOR PRIORITY RANKING

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

[UDY: 2 COMPLETENESS: SOURCE: GRM 000100 17: 2913
(PE: TERATOGENICITY YEAR: 1973
?ECIES: RAT LEL: > MG/KG BW/DAY
JRATION: 10 DAYS HNEL: 410 MG/KG BW/DAY
?FECTS: NO EFFECTS
[TES:
)MMENTS: TEST COMPOUND ADMINISTERED DAY 6-15 OF GESTATION
NIDATION, MATERNAL AND FETAL SURVIVAL, VISCERAL, SKELETAL PATH
OBSERVED

[UDY: 1 COMPLETENESS: SOURCE: GRM 000100 17: 2913
(PE: TERATOGENICITY YEAR: 1973
?ECIES: MOUSE LEL: > MG/KG BW/DAY
JRATION: 10 DAYS HNEL: 465 MG/KG BW/DAY
?FECTS: NO EFFECTS
[TES:
)MMENTS: TEST COMPOUND ADMINISTERED DAY 6-15 OF GESTATION
NIDATION, MATERNAL AND FETAL SURVIVAL, VISCERAL, SKELETAL PATH
OBSERVED

)X 3: GENETIC TOXICITY STUDIES

[UDY: 3 COMPLETENESS: SOURCE:
(PE: YEAR:
?ECIES: LEL: MG/KG BW/DAY
JRATION: HNEL:
?FECTS:
ELLS:
)MMENTS:

[UDY: 4 COMPLETENESS: SOURCE:
(PE: YEAR:
?ECIES: LEL: MG/KG BW/DAY
JRATION: HNEL:
?FECTS:

)CNUM=1813

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

CALCIUM PHOSPHATE, DIBASIC

ıS#:	007757939	HUMAN CONSUMPTION:	5.3531	MG/KG BW/DAY/PERSON
ıSP#:	1813	MARKET DISAPPEARANCE:	6316666.666	LBS/YR
'PE:	ASP	MARKET SURVEY:	87	
ıS#:	0048	JECFA:	FU-C	
:MA#:		JECFA ADI:	70	MG/KG BW/DAY/PERSON
:AS#:		JECFA ESTABLISHED:	1983	
		LAST UPDATE:	921215	

/: 136.06 DENSITY: LOGP:

'RUCTURE CATEGORIES: A7

)MPONENTS:

'NONYMS:

CALCIUM PHOSPHATE, DIBASIC, DENTAL GRADE
DICALCIUM PHOSPHATE
CALCIUM HYDROGEN PHOSPHATE
CALCIUM ACID PHOSPHATE
CALCIUM HYDROXY PHOSPHATE
DICALCIUM ORTHOPHOSPHATE
PHOSPHORIC ACID, CALCIUM SALT (1:1)
CALCIUM MONOHYDROGEN PHOSPHATE
DICALCIUM HYDROGEN PHOSPHATE
PHOSPHATE, DIBASIC CALCIUM

IEMICAL FUNCTION: G

:CHNICAL EFFECT:

LEAVENING AGENT
NUTRIENT SUPPLEMENT
MASTICATORY SUBSTANCE
EMULSIFIER OR EMULSIFIER SALT
STABILIZER OR THICKENER
PH CONTROL AGENT
ANTICAKING AGENT OR FREE-FLOW AGENT
DRYING AGENT
HUMECTANT
DOUGH STRENGTHENER

'R REG NUMBERS:

182.1217	182.5217	137.105
137.155	182.8217	137.165
137.160	137.170	137.175
137.180	137.185	175.300

DCNUM=1815

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

CALCIUM PHOSPHATE, TRIBASIC

AS#:	007758874	HUMAN CONSUMPTION:	10.8615	MG/KG BW/DAY/PERSON
ASP#:	1815	MARKET DISAPPEARANCE:	12816666.666	LBS/YR
YPE:	ASP	MARKET SURVEY:	87	
AS#:	3081	JECFA:	FU-C	
EMA#:	3081	JECFA ADI:	70	MG/KG BW/DAY/PERSON
RAS#:	3	JECFA ESTABLISHED:	1983	
OTENTIAL BEVERAGE USE		LAST UPDATE:	931115	
W:	310.20	DENSITY:	LOGP:	

TRUCTURE CATEGORIES: A7

OMPONENTS:

YNONYMS:
TRICALCIUM PHOSPHATE
TRICALCIUM ORTHOPHOSPHATE
CALCIUM ORTHOPHOSPHATE
PHOSPHORIC ACID, CALCIUM SALT (2:3)
CALCIUM PHOSPHATE (3:2)
PHOSPHATE, TRICALCIUM

HEMICAL FUNCTION: G

ECHNICAL EFFECT:
NUTRIENT SUPPLEMENT
ANTICAKING AGENT OR FREE-FLOW AGENT
DRYING AGENT
HUMECTANT
FORMULATION AID
EMULSIFIER OR EMULSIFIER SALT
TEXTURIZER
PH CONTROL AGENT
FLAVORING AGENT OR ADJUVANT
LEAVENING AGENT

FR REG NUMBERS:

169.179	137.105	182.1217
182.5217	137.155	182.8217
137.165	137.160	137.170
137.175	137.180	137.185
169.182	175.300	

INIMUM TESTING LEVEL: 3

OMMENTS: