

Syn

allowed

# NOSB NATIONAL LIST FILE CHECKLIST

## PROCESSING

MATERIAL NAME: Potassium carbonate

CATEGORY: Synthetic Allowed

Complete?: 3/17

NOSB Database Form

References

MSDS (or equivalent)

FASP (FDA)

Date file mailed out: 2/6/95

TAP Reviews from: Bob Dorst

Steve Taylor

~~Patricia~~ ~~Carla~~ Rich Theuer

\_\_\_\_\_

Supplemental Information:

*only where not Sodium carbonate  
is inappropriate*

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 Potassium Carbonate

Type of Use:  Crops;  Livestock;  Processing

TAP Review by:

1. Steve Taylor
2. Potassium carbonate
3. Bob Durst

Comments/Questions:

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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: 6 Feb

Name of Material: Potassium Carbonate

Reviewer Name: Steve Taylor

Is this substance Natural or Synthetic? Explain (if appropriate)

*Uncertain*

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?

Any additional comments or references?

Signature Steve Taylor

Date 3-10-95



USDA/TAP REVIEWER  
COMMENT FORM

Original mailing date: 7 Jan 1995.

Name of Material: Potassium Carbonate  
Reviewer Name: Richard C. Theuer

**SYNTHETIC** Potassium carbonate is produced by three different methods of manufacture, each of which involves passing carbon dioxide through a solution of potassium hydroxide. See 21CFR184.1619. Potassium hydroxide, in turn, is produced by electrolysis (a synthetic process) of potassium chloride. [The toxic chlorine gas resulting from electrolysis is collected to avoid environmental pollution and adverse health effects.

COMMENTS RE SECTION 2119(M) CRITERIA:

1. Potassium carbonate is an extremely caustic substance, so suitable protection should be employed in its use (avoidance of eye, skin and lung contact) and disposal.
2. For most purposes, sodium carbonate, a natural substance, can replace potassium carbonate, a synthetic substance. The cost of producing potassium carbonate is four to five times that of sodium carbonate.
3. Potassium carbonate is a GRAS (Generally Recognized as Safe) substance [21CFR184.1619].
4. Potassium carbonate is commonly used in the manufacture of cocoa and chocolate [21CFR163.110] (the Dutch alkali process).
5. Potassium carbonate is allowed as a boiler water additive [21CFR173.310]. Boiler additives should not enter organic foods.

The following substance should be added to the National List of Substances as an allowed synthetic ingredient in Organic Food:  
potassium carbonate, in FDA-approved uses where the natural substance sodium carbonate is not an adequate substitute.

February 22, 1995



# USDA/TAP Reviewer Comment Form

3.

Material: Potassium carbonate

Reviewer: Bob Durst

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Is this substance Natural or Synthetic? Explain (if appropriate)  
Synthetic.

Please comment on the accuracy of the information in the file:  
The file is accurate.

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 restriction or limitations that should be placed on this material by use or application on the National List?

Must be listed on the ingredient label.

Any additional comments or references?

As with all synthetic inorganic salts, source must be food grade. In addition each lot should be analyzed for toxic element concentrations (mercury, lead, cadmium, arsenic, thallium and antimony) and a near zero tolerance adopted.

Signature Robert W. Durst

Date 3/4/85





# NOSB Materials Database

4.

## Identification

<b>Common Name</b>	<b>Potassium carbonate</b>	<b>Chemical Name</b>	
<b>Other Names</b>	Carbonic Acid; Dipotassium Salt; Salt of Tartar; Potash		
<b>Code #: CAS</b>	00584-08-7	<b>Code #: Other</b>	NIOSH # TS7750000
<b>N. L. Category</b>	Synthetic Allowed	<b>MSDS</b>	<input checked="" type="radio"/> yes <input type="radio"/> no

## Chemistry

<b>Family</b>	
<b>Composition</b>	$K_2CO_3$
<b>Properties</b>	Either anhydrous or contains 1.5 molecules of water of crystallization. Anhydrous form occurs as a white, granular powder and the hydrate form as small, white, translucent crystals or granules. Odorless, a strongly alkaline taste, is very deliquescent, and solutions are alkaline. Insoluble in alcohol.
<b>How Made</b>	Carbon dioxide is passed through a solution of potassium hydroxide. Potassium hydroxide is produced by electrolysis (a synthetic process) of potassium chloride.
	Processing

## Use/Action

<b>Type of Use</b>	
<b>Specific Use(s)</b>	pH control agent, Leavening agent. Used in baking, soft drinks, confections, and cocoa products Dutch alkali process). Can substitute for sodium carbonates when a lower sodium content is desired. Used also as a boiler water additive which does not enter organic foods.
<b>Action</b>	
<b>Combinations</b>	

## Status

<b>OFPA</b>	
<b>N. L. Restriction</b>	
<b>EPA, FDA, etc</b>	FDA-GRAS
<b>Directions</b>	
<b>Safety Guidelines</b>	Avoid breathing dust. Avoid contact with eyes, skin, clothing.
<b>State Differences</b>	
<b>Historical status</b>	
<b>International status</b>	Allowed by IFOAM, EU and Codex.

## OEPA Criteria

2119(m)1: chemical interactions      Not Applicable

2119(m)2: toxicity & persistence      Not Applicable

2119(m)3: manufacture & disposal consequences

Manufacture results in toxic chlorine gas, but this is collected to avoid environmental pollution.

2119(m)4: effect on human health

Little effect at concentrations used in foods. Inhalation and eye contact can be irritating. Caustic.

2119(m)5: agroecosystem biology      Not Applicable

2119(m)6: alternatives to substance

None that performs the same functions as well. However sodium carbonate can be used as a substitute and it is natural.

2119(m)7: Is it compatible?

## References

AU: Terada,-M; Minami,-J; Yamamoto,-T

TI: Gel electrophoretic observation of change in soluble proteins of wheat flour by treatment with "Kansui" [a mixture of sodium and potassium carbonates containing alkali phosphate]

SO: Agric-Biol-Chem, Jan 1977, 41 (1): 23-27. Ref.

CN: DNAL 385-AG8B

Boyd Foster, 1994. written communication. Arrowhead Mills, TX

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**MSDS for POTASSIUM CARBONATE, ANHYDROUS**  
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**1 - PRODUCT IDENTIFICATION**  
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PRODUCT NAME: POTASSIUM CARBONATE, ANHYDROUS  
FORMULA: K<sub>2</sub>CO<sub>3</sub> FORMULA WT: 138.21  
CAS NO.: 00584-08-7 NIOSH/RTECS NO.: TS7750000  
COMMON SYNONYMS: CARBONIC ACID, DIPOTASSIUM SALT; SALT OF TARTAR; POTASH  
PRODUCT CODES: 3012,3010,3014,3015,5157  
EFFECTIVE: 11/11/86 REVISION #02

PRECAUTIONARY LABELLING

BAKER SAF-T-DATA(TM) SYSTEM  
HEALTH - 2 MODERATE  
FLAMMABILITY - 0 NONE  
REACTIVITY - 1 SLIGHT  
CONTACT - 2 MODERATE

HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).  
LABORATORY PROTECTIVE EQUIPMENT

SAFETY GLASSES; LAB COAT; VENT HOOD; PROPER GLOVES

PRECAUTIONARY LABEL STATEMENTS

WARNING

CAUSES IRRITATION

AVOID CONTACT WITH EYES, SKIN, CLOTHING.

AVOID BREATHING DUST. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE  
VENTILATION. WASH THOROUGHLY AFTER HANDLING.

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

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**2 - HAZARDOUS COMPONENTS**  
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COMPONENT	%	CAS NO.
POTASSIUM CARBONATE	90-100	584-08-7

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**3 - PHYSICAL DATA**  
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BOILING POINT: N/A VAPOR PRESSURE(MM HG): N/A  
MELTING POINT: 891 C ( 1636 F) DECOMPOSES VAPOR DENSITY(AIR=1): N/A  
SPECIFIC GRAVITY: 2.29 EVAPORATION RATE: N/A  
(H<sub>2</sub>O=1) (BUTYL ACETATE=1)  
SOLUBILITY(H<sub>2</sub>O): APPRECIABLE (MORE THAN 10 %) % VOLATILES BY VOLUME: ~0  
APPEARANCE & ODOR: WHITE, ODORLESS GRANULES.

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**4 - FIRE AND EXPLOSION HAZARD DATA**  
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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.  
MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE WATER

TO KEEP FIRE-EXPOSED CONTAINERS COOL.  
UNUSUAL FIRE & EXPLOSION HAZARDS  
NOTE: DECOMPOSES AT BOILING POINT.  
TOXIC GASES PRODUCED: CARBON MONOXIDE, CARBON DIOXIDE

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**5 - HEALTH HAZARD DATA**  
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TOXICITY: LD50 (ORAL-RAT)(MG/KG) - 1870  
CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO  
EFFECTS OF OVEREXPOSURE  
EXCESSIVE INHALATION OF DUST IS IRRITATING AND MAY BE SEVERELY DAMAGING  
TO RESPIRATORY PASSAGES AND/OR LUNGS.  
CONTACT WITH SKIN OR EYES MAY CAUSE SEVERE IRRITATION OR BURNS.  
TARGET ORGANS: EYES, SKIN  
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE IDENTIFIED  
ROUTES OF ENTRY: EYE CONTACT, SKIN CONTACT, INHALATION  
EMERGENCY AND FIRST AID PROCEDURES: CALL A PHYSICIAN.  
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL  
RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.  
IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES OR SKIN WITH PLENTY OF WATER FOR  
AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES.  
WASH CLOTHING BEFORE RE-USE.

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**6 - REACTIVITY DATA**  
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STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR  
CONDITIONS TO AVOID: MOISTURE  
INCOMPATIBLES: WATER, STRONG ACIDS, MAGNESIUM,  
BROMINE TRIFLUORIDE AND TRICHLORIDE  
DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE

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**7 - SPILL AND DISPOSAL PROCEDURES**  
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STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE  
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.  
WITH CLEAN SHOVEL, CAREFULLY PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND  
COVER; REMOVE FROM AREA. FLUSH SPILL AREA WITH WATER.  
J. T. BAKER NEUTRACIT-2(R) CAUSTIC NEUTRALIZER IS RECOMMENDED  
FOR SPILLS OF THIS PRODUCT.  
DISPOSAL PROCEDURE  
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL  
ENVIRONMENTAL REGULATIONS.

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**8 - PROTECTIVE EQUIPMENT**  
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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, UNIFORM, RUBBER  
GLOVES ARE RECOMMENDED.

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**9 - STORAGE AND HANDLING PRECAUTIONS**  
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SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)  
SPECIAL PRECAUTIONS

KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE  
AREA.

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**10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION**  
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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)



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

POTASSIUM CARBONATE

IS#:	000584087	HUMAN CONSUMPTION:	1.6101	MG/KG BW/DAY/PERSON
ASP#:	2577	MARKET DISAPPEARANCE:	1900000.000	LBS/YR
PE:	ASP	MARKET SURVEY:	87	
IS#:	0150	JECFA:	NL	
MA#:		JECFA ADI:		
AS#:		JECFA ESTABLISHED:	1965	MG/KG BW/DAY/PERSON
		LAST UPDATE:	931215	
I:	138.21	DENSITY:		
		LOGP:		

STRUCTURE CATEGORIES: A7

COMPONENTS:

NONYMS:

- POTASSIUM CARBONATE, ANHYDROUS
- PEARL ASH
- CARBONIC ACID, DIPOTASSIUM SALT
- DIPOTASSIUM CARBONATE
- POTASSIUM CARBONATE (K2CO3)

CHEMICAL FUNCTION: D

TECHNICAL EFFECT:

- PH CONTROL AGENT
- NUTRIENT SUPPLEMENT
- LEAVENING AGENT
- FLAVORING AGENT OR ADJUVANT
- PROCESSING AID

REG NUMBERS: 173.310 172.560 184.1619  
 163.110

MINIMUM TESTING LEVEL: 3

REFERENCES: STUDIES 1-4 FROM SCOGS-26

EX 4A: LOWEST EFFECT LEVEL OBSERVED IN ALL AVAILABLE RAT OR MOUSE STUDIES

STUDY: 7

SPECIES: RAT

EFFECTS: SOFT STOOL

COMPLETENESS: C RANKING FACTOR: 1.073E-3

LEL: 1500 MG/KG BW/DAY

AUG 94

ACNUM=2577

COMMENTS: MALES ONLY, ONE DOSE LEVEL ONLY, REPORTING INCOMPLETE

OX 4C: LOWEST EFFECT LEVEL OBSERVED IN ALL AVAILABLE STUDIES

STUDY: 7 COMPLETENESS: C RANKING FACTOR: 1.073E-3  
SPECIES: RAT LEL: 1500 MG/KG BW/DAY

EFFECTS: SOFT STOOL

COMMENTS: MALES ONLY, ONE DOSE LEVEL ONLY, REPORTING INCOMPLETE

OX 7: ACUTE TOXICITY INFORMATION

STUDY: 6 SOURCE: GRM 000011 8:1434  
SPECIES: RAT YEAR: 1974  
LD50: 1800 MG/KG BW

COMMENTS: STUDY 3 LD50 = 1870 MG/KG

STUDY: 5 SOURCE: GRM 000011 8:1432  
SPECIES: MOUSE YEAR: 1974  
LD50: 2900 MG/KG BW

COMMENTS:

OX 9: ORAL TOXICITY STUDIES (OTHER THAN ACUTE)

STUDY: 2 COMPLETENESS: SOURCE: GRM 000011 7:1237-1263  
SPECIES: RAT YEAR: 1975  
LD50: 1800 MG/KG BW/DAY  
EFFECTS: NO EFFECTS

COMMENTS: ADMINISTERED DAY 6-15 OF GESTATION

STUDY: 1 COMPLETENESS: SOURCE: GRM 000011 7:1237-1263  
SPECIES: MOUSE YEAR: 1975  
LD50: 290 MG/KG BW/DAY  
EFFECTS: NO EFFECTS

COMMENTS: ADMINISTERED DAY 6-15 OF GESTATION

STUDY: 7 COMPLETENESS: C SOURCE: CANCER RES 47:4821-4824  
SPECIES: RAT YEAR: 1987  
LD50: 1500 MG/KG BW/DAY  
EFFECTS: NO EFFECTS

COMMENTS: ADMINISTERED DAY 6-15 OF GESTATION