

Non

2/16/95

NOSB NATIONAL LIST FILE CHECKLIST

PROCESSING

MATERIAL NAME: Sodium carbonates

CATEGORY: Non-agricultural

Complete?: 3/17

✓

NOSB Database Form

✓

References

✓

MSDS (or equivalent)

✓

FASP (FDA)

✓

Date file mailed out: 1/8/95

✓

TAP Reviews from: Bob Durst

Steve Taylor

Richard Thayer

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 sodium carbonate

Type of Use: Crops; Livestock; Processing

TAP Review by:

1. Steve Taylor
2. Richard Theuer
3. Bob Durst

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: Sodium Carbonate

Reviewer Name: Steve Taylor

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

Synthetic

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?

Made from sodium bicarbonate and ammonia

Any additional comments or references?

Signature Steve Taylor

Date 3-5-95

USDA/TAP Reviewer Comment Form

2.

Material: Sodium carbonate

Reviewer: Bob Durst

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



Date

3/11/95

**USDA/TAP REVIEWER
COMMENT FORM**

Original mailing date: 7 Jan 1995.

Name of Material: Sodium Carbonate and Sodium Bicarbonate
Reviewer Name: Richard C. Theuer

NATURAL Sodium carbonate and sodium bicarbonate produced in North America are made primarily from natural deposits of trona ore (90% sodium sesquicarbonate). In California, sodium carbonate and sodium bicarbonate are produced by generally similar methods from natural brine (Searles Lake).

Trona ore is heated at temperatures (160-200°C, or 320-390°F) achievable in the home kitchen. The calcined ore, which is impure soda ash (sodium carbonate), is mixed with water to dissolve the soda ash and to separate it from insoluble impurities. This solution is concentrated by evaporation and sodium carbonate monohydrate crystals are separated.

Sodium bicarbonate is prepared by adding the carbon dioxide in the kiln gas to a saturated pure sodium carbonate solution. The sodium bicarbonate formed is less soluble than the sodium carbonate and it precipitates out of the solution.

Other parts of the world may use the old Solvay process to produce synthetic sodium carbonates. The Solvay process uses salt (sodium chloride) and limestone (calcium carbonate) to produce soda ash (sodium carbonate) and calcium chloride. The only major use for calcium chloride was to keep dirt roads less dusty in the summer (calcium chloride is very deliquescent) and to de-ice city streets and highways in the winter (it replaces road salt and adds calcium instead of sodium to the runoff).

COMMENTS RE SECTION 2119(m) CRITERIA:

1. Compared to the original Solvay process for sodium carbonate production, trona ore extraction has the advantage of being natural and less environmentally damaging. Generally, food usage of sodium carbonates is limited. Waste water facilities generally can balance off alkaline waste water with the more common acidic wastes.
2. Sodium carbonates are corrosive caustics; cautious use and protection is required during use. Sodium is an essential nutrient for man and other animals. Current food labeling regulations require sodium labeling on all foods, so usage is controlled by manufacturers.
3. Sodium carbonate is essential for the characteristic color of pretzels. Potassium carbonate, bicarbonate and/or hydroxide can replace some pH adjusting roles of sodium carbonates, but these are less environmentally good, are more expensive and contribute a different and more bitter nutrient to the food.
4. Production of sodium carbonates from an ore which is 90% sodium carbonates is more sustainable than other methods.

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

sodium carbonate, sodium bicarbonate.

NOSB Materials Database

4.

Identification

Common Name **Sodium carbonates** **Chemical Name**
Other Names Soda Ash, Bicarbonate of Soda, Baking Soda
Code #: CAS **Code #: Other**
N. L. Category Non-agricultural **MSDS** yes no

Chemistry

Family

Composition $\text{Na}_2\text{CO}_3 \cdot x\text{H}_2\text{O}$

Properties Colorless crystals or white, granular or crystalline powder. Soluble in water, and solutions are alkaline. May be anhydrous or may contain 1 or 10 molecules of water of hydration.

How Made In the US the main source is natural deposits of trona ore. Also can be from natural brine (In Searles Lake in California). Trona ore (sodium sesquicarbonate) is heated and then mixed with water to dissolve the soda ash and to separate out insoluble impurities. Then concentrated by evaporation to crystallization.

Sodium bicarbonate (baking soda) is prepared by adding the carbon dioxide in the kiln gas to a saturated pure sodium carbonate solution. The bicarbonate formed precipitates out of the solution.

The older method is the Solvay process from sodium bicarbonate and ammonia, or by reaction of sodium chloride and calcium carbonate with ammonia.

Use/Action

Type of Use Processing

Specific Use(s) Alkali. Neutralizer for dairy products; in olives before canning; and in cocoa products. Baking Soda is used as a leavening agent in pancakes, biscuits, and muffins; in baking powder, in crackers and cookies and in self-rising flours.

Action

Combinations

Status

OFPA

N. L. Restriction

EPA, FDA, etc FDA-GRAS

Directions

Safety Guidelines Caustic and corrosive. Use appropriate protection during use.

State Differences

Historical status

International status Allowed by IFOAM, EU, and Codex.

NOSB Materials Database

5.

OFPA Criteria

2119(m)1: chemical interactions **Not Applicable**

2119(m)2: toxicity & persistence **Not Applicable**

2119(m)3: manufacture & disposal consequences

Alkaline waste water generated from this use can be balanced out by acidic wastes.

2119(m)4: effect on human health

Irritating to lungs and eyes.

2119(m)5: agroecosystem biology **Not Applicable**

2119(m)6: alternatives to substance
Other alkalis, such as potassium carbonate.

2119(m)7: Is it compatible?

References

AU: Trenholm,-H.L.; Charmley,-L.L.; Prelusky,-D.B.; Warner,-R.M.

TI: Washing procedures using water or sodium carbonate solutions for the decontamination of three cereals contaminated with deoxynivalenol and zearalenone.

SO: J-agric-food-chem. Washington, D.C. : American Chemical Society. Nov 1992. v. 40 (11) p. 2147-2151.

CN: DNAL 381-J8223

AB: Washing techniques for decontaminating deoxynivalenol (DON)- and zearalenone (ZEN)-contaminated grains were developed. Using 1 M sodium carbonate solution for the first wash reduced DON by 72-74% and ZEN by 80-87%. Soaking barley, corn, and wheat in a 0.1 M sodium carbonate solution for 24 or 72 h caused a 42-100% reduction in toxin concentration.

AU: Whitehead,-W.E.; Ayres,-J.W.; Sandine,-W.E.

TI: A review of starter media for cheese making.

SO: J-dairy-sci. Champaign, Ill. : American Dairy Science Association. Aug 1993. v. 76 (8) p. 2344-2353.

CN: DNAL 44.8-J822

AB: In the early days of the dairy industry, raw milk was used to grow starters for cheese making. To improve cheese quality, the raw milk eventually was replaced by selected producer's milk, NDM. Performance examples of available starter media for both mesophilic and thermophilic starters are discussed.

TI: Flotation materials for pears.

SO: Tree-Fruit-Postharvest-J. Pullman, Wash. : Washington State University Cooperative Extension. June 1992. v. 3 (2) p. 9-11.

CN: DNAL TP440.P67

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

MATERIAL SAFETY DATA SHEET
SODIUM CARBONATE

SECTION I - Product Identification

PRODUCT NAME: SODIUM CARBONATE
FORMULA: N/A
FORMULA WT: N/A
COMMON SYNONYMS: N/A

SECTION II - Hazardous Components

SODIUM CARBONATE

SECTION III - Physical Data

BOILING POINT: DECOMPOSES VAPOR PRESSURE(MM HG): N/A
MELTING POINT: N/A VAPOR DENSITY(AIR=1): NA
SPECIFIC GRAVITY: N/A EVAPORATION RATE: NA
(H20=1) (BUTYL ACETATE=1)
SOLUBILITY(H20): N/A % VOLATILES BY VOLUME: NIL
APPEARANCE & ODOR: WHITE GRANULAR SOLID/ODORLESS.

SECTION IV - Fire and Explosion Hazard Data

FLAMMABILITY CLASSIFICATION: UNK
FLASH POINT: NON
FLAMMABLE LIMITS: UPPER - NA % LOWER - NA %
FIRE EXTINGUISHING MEDIA: ALL
SPECIAL FIRE-FIGHTING PROCEDURES: NONE
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

SECTION V - Health Hazard Data

EFFECTS OF OVEREXPOSURE:
SKIN/MUCOUS MEMB/RESP TRACT IRR;EYE/SEVERE IRR-CORNEAL OPACITIES
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE:
MAY CAUSE INFLAMM OF MUCOUS MEMB IN RESP TRACT AND OF SKIN
PRIMARY ROUTE(S) OF ENTRY: EYE/SKIN/INGEST/INHALE
EMERGENCY AND FIRST AID PROCEDURES:
EYE/WASH UND LIDS W/LOTS H2O 15 MIN-SEE DR;SKIN/WASH W/LOTS H2O 15 MIN-SEE DR
INGEST/H2O TO DILUTE-CALL DR;INHALE/FRESH AIR-CALL DR IF NEC

SECTION VI - Reactivity Data

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: CONTACT W/ACIDS EXCEPT UNDER CONTROLLED CONDITIONS
INCOMPATIBLES: REACTS W/ACIDS W/RELEASE OF LG VOLUMES OF CARBON
DIOXIDE GAS AND HEAT
DECOMPOSITION PRODUCTS: NONE

SECTION VII - Spill and Disposal Procedures

DISPOSAL PROCEDURE:
MTS IN SECURE CHEM LANDFILL BY REGS;EMPTY CONTAINERS INCINER OR GEN TRASH

OTHER PRECAUTIONS: NONE

=====
SECTION VIII - Protective Equipment
=====

VENTILATION:

GENERAL ROOM DILUTION OR LOCAL EXHAUST IF EXCESS DUST MAY BE RELEASED

RESPIRATORY PROTECTION: DUST RESP IF TLV 10MG/CUBIC METER EXCEEDED

EYE PROTECTION: CHEMICAL GOGGLES

SKIN PROTECTION: GENERAL PURPOSE

OTHER EQUIPMENT: FULL COVER CLOTHING

HYGIENIC PRACTICES: WASH W/SOAP AND WATER
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SECTION IX - Storage and Handling Precautions
=====

SPECIAL PRECAUTIONS:

AWAY FROM ACIDS;MINIMIZE FREE FALL TO MINIMIZE DUST GENERATED
=====

SECTION X - Transportation Data and Additional Information
=====

N/A

(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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AUG 84

NUM=2733

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

DISODIUM
CARBONATE

#: 005968116	HUMAN CONSUMPTION:	8.5593	MG/KG BW/DAY/PERSON
SP#: 2733	MARKET DISAPPEARANCE:	10100000.000	LBS/YR
DE: ASP	MARKET SURVEY:	87	
#: 0185	JECFA:	NL-C	
AA#:	JECFA ADI:		MG/KG BW/DAY/PERSON
AS#:	JECFA ESTABLISHED:	1965	
	LAST UPDATE:	931115	
	DENSITY:	LOGP:	

STRUCTURE CATEGORIES: A7

COMPONENTS:

SYNONYMS: DISODIUM CARBONATE MONOHYDRATE
CARBONIC ACID DISODIUM SALT, MONOHYDRATE

EMICAL FUNCTION: D

PHYSICAL EFFECT: PH CONTROL AGENT
PROCESSING AID
LEAVENING AGENT
ANTIOXIDANT
CURING OR PICKLING AGENT
FLAVORING AGENT OR ADJUVANT

REG NUMBERS: 173.310 184.1742 163.110

MINIMUM TESTING LEVEL: 3

COMMENTS: NO TOX STUDIES IN SCOGS-26

ACUTE TOXICITY INFORMATION

LD50: 5	SOURCE: GRM 000011	8:1368
SPECIES: RAT	YEAR: 1973	
COMMENTS:	LD50: 2450	MG/KG BW
LD50: 4	SOURCE: GRM 000011	8:1366

SPECIES: MOUSE
 YEAR: 1973
 LD50: 3400 MG/KG BW
 COMMENTS: STUDY #8 LD50 = 4090 MG/KG
 SOURCE: GRM 000011 8:1370
 YEAR: 1973
 LD50: 1790 MG/KG BW
 COMMENTS:

9: ORAL TOXICITY STUDIES (OTHER THAN ACUTE)

SOURCE: GRM 000011 8:1418
 YEAR: 1974
 COMPLETENESS: B
 TERATOLOGY (GAVAGE)
 SPECIES: RABBIT
 DURATION: 13 DAYS
 COMMENTS: NO EFFECTS
 COMMENTS: