Non-Synthetic, allowed

NOSB NATIONAL LIST
FILE CHECKLIST

4-26-95

PROCESSING

MATERIAL NAME: Nitrogen

CATEGORY: Non-agricultural

Complete?: 3/17

✓ NOSB Database Form

✓ References

✓ MSDS (or equivalent)

✓ FASP (FDA)

✓ Date file mailed out: 2/14/95

✓ TAP Reviews from: Bob Durst
Richard Theuer
Steve Harper

____ Supplemental Information:

oil free, non oil source

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 Nitrogen

Type of Use: ____ **Crops;** ____ **Livestock;** ✓ **Processing**

TAP Review by:

1. Richard Theuer
2. Steve Harper
3. Bob Dorst

Comments/Questions:

My Opinion/Vote is:

Signature _____ **Date** _____

~~Nat~~ Non-Synthetic, appropriate allowed

1.

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: 14 Feb

Name of Material: Nitrogen

Reviewer Name: Steven Harper

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

Nitrogen is a natural substance, although it can sometimes be produced synthetically.

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

Good.

This material should be added to the National List as:

____ **Synthetic Allowed** ____ **Prohibited Natural**

or, X **This material does not belong on the National List because:** Nitrogen is a natural substance which is not normally produced synthetically.

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

No.

Any additional comments or references?

Signature Steven Harper **Date** 3/10/95

USDA/TAP Reviewer Comment Form

2.

Material: Nitrogen

Reviewer: Bob Durst

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

It is a natural substance. It is a common constituent of air.

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

__X__ This material does not belong on the National List because: it is a natural substance and would not need to be listed on an ingredient label.

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

Any additional comments or references?

It should be used only in an oil-free grade.

Signature Robert W. Durst Date 3/4/95

3.

USDA/TAP REVIEWER COMMENT FORM

Original mailing date: 14 Feb 1995.

Material: Nitrogen 21CFR184.1540
Reviewer: Richard C. Theuer

NATURAL Nitrogen constitutes 80% of the air we breath. Nitrogen is separated from air by three methods: cryogenically (super cold temperature liquefaction of air and fractional distillation), membrane separation (becoming more common) and oxygen depletion by combustion (very old method).

COMMENTS RE SECTION 2119(m) CRITERIA:

1. Nitrogen gas is natural.
2. Newer membrane separation methods require less energy and can be set up in-plant.
3. Nitrogen is a relatively inert gas and helps to enhance product stability by displacing oxygen and thus reducing oxidation. Under pressure, it is a superior propellant without ozone-depleting properties.
4. Liquid nitrogen is very cold and is used in newer flash freezing.

The following natural substance should be allowed as a processing aid or ingredient for 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:

nitrogen (gaseous or liquid)

12 Mar 1995

NOSB Materials Database

Identification

Common Name **Nitrogen** **Chemical Name**

Other Names Dinitrogen, molecular nitrogen, nitrogen gas.

Code #: CAS 7727-37-9 **Code #: Other**

N. L. Category Non-agricultural **MSDS** ◉ yes ○ no

Chemistry

Family

Composition N_2

Properties colorless, odorless gas.

How Made Separated from air, either by cryogenic distillation, combustion of natural gas or propane, and pressure-swing adsorption (PSA). Cryogenic distillation is the most economic and high purity method: Air is compressed, then cooled and then zeolite exchangers remove water, carbon dioxide and impurities by contact adsorption. Nitrogen is then cooled and partially liquefied with multiple compression and expansion to purify. PSA uses carbon molecular sieves with different diffusion rates.

Processing

Use/Action

Type of Use

Specific Use(s) Used as a blanket or purge to preclude oxidation during processing, storage and packaging. Keeps cans rigid in still juice. Excludes oxygen from sealed containers. Used in flash freezing of foods because liquid N2 involves a shorter freezing time than conventional deep freeze, thus preserving quality and reducing bacterial growth and cell damage.

Action Dissolved oxygen is stripped from liquids by sparging nitrogen through the liquids.

Combinations

Status

OFPA

N. L. Restriction

EPA, FDA, etc

Directions

Safety Guidelines workers must have adequate ventilation when around gas, protective clothing in handling liquid.

State Differences

Historical status

Internationl status Allowed by IFOAM, EU 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 for nitrogen itself, which is readily assimilated into atmosphere. Similar to any other industrial plant for the environmental impact of manufacturing activities.

2119(m)4: effect on human health

None for presence of nitrogen in food products. Safe handling of nitrogen gas or liquid requires knowledge of safety procedures available from suppliers. Vapors cause dizziness, light headedness or suffocation.

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

2119(m)6: alternatives to substance

Other inert gasses.

2119(m)7: Is it compatible?

Nitrogen is very compatible with organic food production as it is non-toxic, historically accepted and is not normally synthetically produced. (SH).

References

The Merck Index. 9th ed. Rahway, New Jersey: Merck & Co., Inc., 1976. p. 915

Kirk-Othmer Encyclopedia of Chemical Technology, 3rd. Ed., Volume 15, pp 932-941.

Haussinger, Peter, et. al., "Nitrogen", *in*: Ullmann's Encyclopedia of Industrial Chemistry, 5th Edition, Elvers, et. al. (eds.) VCH Verlagsgessellschaft mbH, Wenheim, Germany. 1992. Vol. A17. p. 457-469.

Sax, N.I. and R.J. Lewis, Sr. (eds.), Hawleys Condensed Chemical Dictionary. 11th ed. New York; Van Nostrand Reinhold Co., 1987. p 828.

Furia, T.E. (ed.). CRC Handbook of Food Additives. 2nd ed. Cleveland: the Chemical Rubber Co., 1972. p 903.

Ag Partners of Davis, Materials Report on Nitrogen. 1995. Organic Trade Association, Greenfield, MA.

MATERIAL SAFETY DATA SHEET
NITROGEN

SECTION I - Product Identification

PRODUCT NAME: NITROGEN
COMPANY NAME: LIQUID AIR CORP.
CHEMICAL FAMILY: INERT GAS
DATE: OCTOBER 1, 1985
EMERGENCY TELEPHONE: (415)977-6500

SECTION II - Hazardous Components

NONE GIVEN

SECTION III - Physical Data

BOILING POINT: -320.445 F
VAPOR PRESSURE: @ 70 F ABOVE THE CRITICAL TEMP. OF 232.51 F
SOLUBILITY IN WATER: @ 68 F BUNSEN COEFFICIENT = .01557
LIQUID DENSITY AT BOILING POINT: 50.48 LB/FT3
GAS DENSITY AT 70 F 1 ATM: .07245 LB/FT3
FREEZING POINT: -346.004 F
SPECIFIC GRAVITY: @ 70 F (AIR=1) IS .97
APPEARANCE AND ODOR: COLORLESS AND ODORLESS GAS

SECTION IV - Fire and Explosion Hazard Data

FLASH POINT: NONE GIVEN
AUTO IGNITION TEMP: NONE GIVEN
FLAMMABLE LIMITS % BY VOLUME: NONE GIVEN
EXTINGUISHING MEDIA: NONE GIVEN
ELECTRICAL CLASS: NONHAZARDOUS

SECTION V - Health Hazard Data

EFFECTS OF OVEREXPOSURE:
INHALATION: LOSS OR BALANCE, TIGHTNESS IN THE FRONTAL AREA OF THE FOREHEAD, TINGLING OF THE TONGUE, FINGERTIPS OR TOES, WEAKENED SPEECH LEADING TO THE INABILITY TO UTTER SOUNDS, RAPID REDUCTION IN THE ABILITY TO PERFORM MOVEMENTS REDUCED CONSCIOUSNESS OF THE SURROUNDING, LOSS OF TACTILE SENSATIONS, HEIGHTENED MENTAL ACTIVITY.
EMERGENCY FIRST AID:
PROMPT MEDICAL ATTENTION IS MANDATORY. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.
INHALATION: CONSCIOUS PERSONS SHOULD BE ASSISTED TO AN UNCONTAMINATED AREA AND INHALE FRESH AIR. QUICK REMOVAL FROM THE CONTAMINATED AREA IS MOST IMPORTANT.
UNCONSCIOUS PERSONS SHOULD BE MOVED TO AN UNCONTAMINATED AREA, GIVEN MOUTH-TO- MOUTH RECESSITATION AND SUPPLEMENTAL OXYGEN. MEDICAL ASSISTANCE SHOULD BE SOUGHT.

SECTION VI - Reactivity Data

STABILITY: STABLE
INCOMPATIBILITY: NONE GIVEN
HAZARDOUS DECOMPOSITION PRODUCTS: NONE GIVEN
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VII - Spill and Disposal Procedures

SPILLS: EVACUATE ALL PERSONNEL FROM AFFECTED AREA. USE APPROPRIATE PROTECTIVE EQUIPMENT. IF LEAK IS IN CONTAINER OR CONTAINER VALVE, CONTACT THE CLOSEST LIQUID AIR CORP.
DISPOSAL: DO NOT ATTEMPT TO DISPOSE OF WASTE OR UNUSED QUANTITIES. RETURN IN THE SHIPPING CONTAINER PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE TO LIQUID AIR CORP.

SECTION VIII - Protective Equipment

RESPIRATORY PROTECTION: POSITIVE PRESSURE AIR LINE WITH MASK OR SELF-CONTAINED BREATHING APPARATUS SHOULD BE AVAILABLE FOR EMERGENCY USE.
VENTILATION: TO PREVENT ACCUMULATION OF HIGH CONCENTRATIONS SO AS TO REDUCE THEOXYGEN LEVEL IN THE AIR TO LESS THAN 18 MOLAR PERCENT.
PROTECTIVE GLOVES: ANY MATERIAL
EYE PROTECTION: SAFETY GOGGLES OR GLASSES
OTHER: SAFETY SHOES

SECTION IX - Storage and Handling Precautions

HANDLING:
USE IN WELL-VENTILATED AREA. DO NOT HEAT. DO NOT ROLL, SLIDE, OR DRAG. USE HAND TRUCK TO MOVE. USE PRESSURE REDUCING REGULATOR WHEN CONNECTING TO LOWER PRESSURE PIPING SYS.
STORAGE:
PROTECT FROM PHYSICAL DAMAGE. DO NOT LET STORAGE ROOM EXCEED 130 F. KEEP AWAY FORM EMERGENCY EXITS AND TRAFFIC. FULL AND EMPTY CYLINDERS SHOULD BE SEGREGATED. STORE IN COOL, DRY, WELL-VENTILATED AREA

SECTION X - Transportation Data and Additional Information

NITROGEN IS NONCORROSIVE AND MAY BE USED WITH ANY COMMON STRUCTURAL MATERIAL.

(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. Copyright by Manufacturer
LICENSE GRANTED TO MAKE UNLIMITED COPIES FOR INTERNAL USE ONLY
by OREGON STATE UNIVERSITY

)CNUM=2449

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

[TROGEN

\S#:	007727379	HUMAN CONSUMPTION:	34.6045	MG/KG BW/DAY/PERSON
\SP#:	2449	MARKET DISAPPEARANCE:	40833333.333	LBS/YR
/PE:	ASP	MARKET SURVEY:	87	
\S#:	0138	JECFA:	NS	
EMA#:		JECFA ADI:		MG/KG BW/DAY/PERSON
RAS#:		JECFA ESTABLISHED:	1980	
		LAST UPDATE:	931115	
V:	28.02	DENSITY:	LOGP:	

TRUCTURE CATEGORIES: B1

)MPONENTS:

/NONYMS:

HEMICAL FUNCTION: G

ECHNICAL EFFECT: ANTIOXIDANT
FORMULATION AID
PROPELLANT

FR REG NUMBERS: 169.140 169.115 184.1540
169.150

INIMUM TESTING LEVEL: 3

)MMENTS: NO TOX DATA IN SCOGS-112