

MATERIAL SAFETY DATA SHEET


NX-18 DLC®

Date Revised: November 15, 2004

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1. PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: NX-18 DLC, a thiocarboxylate functional silane.
CHEMICAL NAME: Octanethioic acid, S-[3-(triethoxysilyl)propyl]ester silane on Silicon Dioxide

Company:  NATROCHEM, INC.
P.O. Box 1205
Savannah, GA 31402-1205

HMIS RATING	
HEALTH	2
FLAMMABILITY	1
REACTIVITY	1

Telephone Numbers:

Transportation Emergencies:

CHEMTREC (U.S.A.): (800) 424-9300 (24 hours)

CHEMTREC (International): (202) 483-7616 (24 hours, call collect)

Product Information: (912) 236-4464 (EST, 8:00AM – 4:00PM M-F)

2. COMPOSITION/INFORMATION ON INGREDIENTS

The component(s) listed below is identified as a hazardous chemical under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

INGREDIENT	CAS REGISTRY	PERCENT
Calcium Silicate	1344-95-2	28.0
Octanethioic acid, S-[3-(triethoxysilyl)propyl]ester	220727-26-4	< 72.0
Related siloxanes & silane esters	Not established	< 14.4
Ethanol*	64-17-5	< 0.36

*Additional ethanol may be formed by reaction with moisture.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER! Harmful or fatal if swallowed.

May cause mild eye irritation, swelling, and/or reddening

May cause allergic skin reaction.

4. FIRST AID MEASURES

Swallowing: Unlikely in this form. If patient is fully conscious, give two glasses of water. Induce vomiting. Obtain medical attention immediately.

Skin: Remove contaminated clothing. Wash skin with soap & water. If irritation persists or if contact has been prolonged, obtain medical attention.

Inhalation: Remove to fresh air. Give artificial respiration if not breathing. If breathing is difficult, oxygen may be given by qualified personnel. Obtain medical attention.

Eye Contact: Immediately flush eyes with water and continue washing for several minutes. Obtain medical attention.

Notes to physician: This product contains ethanol. Symptoms vary with the alcohol level of the blood. Mild alcohol intoxication occurs at blood levels between 0.05%-0.15% and approximately 25% of individuals will show signs of intoxication at these levels. Above 0.15%, the person is definitely under the influence of ethanol and 50%-95% of individuals at this level are clinically intoxicated. Severe poisoning occurs when the blood ethanol level is 0.3%-0.5%. Above 0.5%, the individual will be comatose and death can occur.

4. FIRST AID MEASURES, Cont'd.

The unabsorbed ethanol should be removed by gastric lavage after intubating the patient to prevent aspiration. Avoid the use of depressant drugs or the excessive administration of fluids. In the presence of hypoglycemia, administer 5%-10% glucose intravenously, plus thiamine 100 mg intramuscularly. Hemodialysis is indicated if the ethanol concentration in the blood is above 5 mg/ml. Naloxone may be useful to reverse clinical alcoholic coma and 0.4-1.2 mg intravenously may arouse ethanol-intoxicated patients.

5. FIRE-FIGHTING MEASURES

FLASH POINT (Method Used): 230°F

FLAMMABLE LIMITS: N/D

AUTOIGNITION TEMPERATURE: N/D

SPECIAL FIRE FIGHTING PROCEDURES: Air-supplied breathing apparatus should be available to fire fighters. Oxides of nitrogen may be evolved.

EXTINGUISHING MEDIA: Material is reactive with moisture and may be extinguished by smothering with sand or dry powder extinguishing media. Also, copious amounts of water, with proper ventilation, can be used to quench smoldering that has occurred due to heat of hydration.

Suitable: Large fires:
- alcohol-type foam or universal-type foams
Small fires:
- CO₂
- dry chemical

Unsuitable: None.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None known.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Wear suitable protective equipment.

ENVIRONMENTAL PRECAUTIONS: Avoid runoff to sewers or waterways.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: MINIMIZE SPILL AREA. Vacuum spill material and place in closed plastic bags for disposal. Wear suitable protective clothing.

WASTE DISPOSAL METHOD: In a furnace, where permitted, under appropriate local, state, and federal regulations.

7. HANDLING AND STORAGE

HANDLING AND STORAGE: Handling can create explosive dust clouds. Eliminate ignition sources, use explosive proof equipment. Conveying and processing equipment should be spark-proof, well bonded and grounded. Avoid dust accumulations. Do not swallow. Do not get in eyes, on skin, on clothing. Avoid breathing mist or vapor. Use with adequate ventilation.

KEEP CONTAINER CLOSED.

OTHER PRECAUTIONS: If mixed with water, ethanol can form; ethanol vapors are toxic and flammable so special ventilation may be needed.

DANGER! Harmful or fatal if swallowed due to ethanol production in the stomach.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use a respirator such as 3M 9900 or equivalent for protection against pneumoconiosis producing dusts.

VENTILATION: Provide explosion proof ventilation as required to control airborne dust levels. The sum total of all ingredients may emit vapors during normal processing. All possible health effects are not known and individual sensitivities will vary. Effective exhaust ventilation should always be provided to draw dust, fumes and vapors away from workers to prevent routine inhalation.

PROTECTIVE GLOVES: Impervious gloves to protect against contact with product.

EYE PROTECTION: Safety goggles.

OTHER PROTECTIVE EQUIPMENT: Protective clothing, eye wash station, safety shower.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION, Cont'd.**EXPOSURE LIMITS:**

Component	Type	Value	Remark
Ethanol	TWA, OSHA	1,000.0 ppm	
	TWA, ACGIH	1,000.0 ppm	

9. PHYSICAL AND CHEMICAL PROPERTIES**APPEARANCE**

Physical State: Free-flowing powder.
 Color: Off-white.
 Odor: Sulfur.

OTHER PROPERTIES

Boiling Point: >400 °C
 Vapor Pressure (mm Hg): <1
 Vapor Density (Air = 1): >1
 Solubility in Water: Reacts rapidly

Specific Gravity: 1.13
 Percent Volatiles: N/DA
 Evaporation Rate: <1

10. STABILITY AND REACTIVITY

STABILITY: Stable

INCOMPATIBLE MATERIALS: Acids. Bases. Reacts with water or moisture to form ethanol.

HAZARDOUS COMBUSTION PRODUCTS: Burning can produce the following combustion products:

- o Oxides of carbon.
- o Oxides of sulfur.
- o Oxides of silicon.

Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

CONDITIONS TO AVOID- Avoid high temperatures (>800 °C) treatment.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions. However, if product comes in contact with water, hydrolysis can occur.

11. TOXICOLOGICAL INFORMATION**SWALLOWING**

Acute effects: This product hydrolyzes in the stomach to form ethanol. May cause the following effects: - dizziness, faintness, drowsiness, decreased awareness and responsiveness, euphoria, abdominal discomfort, nausea, vomiting, staggering gait, lack of coordination and coma.

Effects of repeated overexposure: Long-term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis.

Calcium Silicate: 5 mg/m³ respirable nuisance dust, OSHA. 10 mg/m³ total nuisance dust, ACGIH.

Test Results

Acute toxicity: LD50 – Rat
 Result: >2,000 mg/kg
 Method: OECD-Guideline No. 423
 Remark: Very low order of toxicity

Test Results

Chronic toxicity: NOEL – Rat
 Result: 30 mg/kg
 Exposure time: 28 d
 Method: OECD-Guideline No. 407
 Remark: Dose: 30, 150, 750 mg/kg/day
 Daily dosage

11. TOXICOLOGICAL INFORMATION, Cont'd.

EFFECTS OF REPEATED OVEREXPOSURE: Prolonged or repeated exposure to excessive concentrations of this product dust or any nuisance dust can cause chronic pulmonary disease. Repeated contact with skin may cause a severe cumulative dermatitis. Long-term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis. Repeated exposure to aerosols from undiluted or aqueous material may result in irritation and injury of the respiratory tract.

PRIMARY ROUTE OF ENTRY- Inhalation, eye, ingestion, dust contact with eyes.

EFFECTS OF EXPOSURE-

EYES- May cause mild irritation, excess redness and/or slight swelling of the conjunctiva, reddening of the sclera.

SKIN- May cause sensitization, allergic skin reaction.

Other effects of overexposure: Repeated ingestion of ethanol by pregnant women has been shown to adversely affect the central nervous system of the fetus, producing a collection of effects which together constitute the fetal alcohol syndrome. These include mental and physical retardation, disturbances of learning, motor and language deficiencies, behavioral disorders, and small size head.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE- Repeated exposure to ethanol may aggravate liver injury produced from other causes.

Preexisting upper respiratory and lung disease such as, but not limited to bronchitis, emphysema and asthma. Skin contact may aggravate an existing dermatitis. May aggravate an existing liver or kidney disease.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD

The following information is based on ethanol:

The International Agency for Research on Cancer (IARC) has determined that the consumption of alcoholic beverages is causally related to the occurrence of malignant tumors of the oral cavity, pharynx, larynx, esophagus and liver in humans. The carcinogenic response attributed to drinking alcoholic beverages has not been verified in studies with laboratory animals. Established uses of denatured ethanol and non-beverage uses of pure ethanol are not considered to pose any significant cancer hazard.

EVALUATION: None Known.

12. ECOLOGICAL INFORMATION

All available ecological data have been taken into account for the development of the hazard and precautionary information contained in this Safety Data Sheet.

AQUATIC TOXICITY

Biodegradation: Microorganisms
Method: OECD-Guideline No. 301 F
Remark: Not readily biodegradable.

Acute toxicity fish: Semi-static – LC50 – Brachydanio rerio
Result: > 100 mg/l
Exposure time: 96 h
Method: OECD 203

12. ECOLOGICAL INFORMATION, Cont'd.

<u>Aquatic toxicity to plants:</u>	Static - EC50 – Scenedesmus subspicatus Result: > 100 mg/l Inhibition of growth Exposure time: 72h
<u>Microorganisms:</u>	Static – EC50 – Bacteriae Result: > 1,000 mg/l Exposure time: 3 h Method: OECD 209
<u>Acute toxicity to aquatic invertebrates:</u>	Static – EC50 – Daphnia magna Result: > 100 mg/l Exposure time: 48 h Method: OECD 202

13. DISPOSAL CONSIDERATIONS

GENERAL: Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations.

14. TRANSPORT INFORMATION

DOT Classification: This product is not regulated by DOT.
Freight description road: SIZING, NOI
IMDG Classification: This product is not regulated by IMDG.
ICAO Classification: This product is not regulated by ICAO.

15. REGULATORY INFORMATION

Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of hazardous substances equal to or greater than the reportable quantities (RQs) in 40CFR302.4.

Components present in this product at a level which could require reporting under the statute are: NONE.

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40CFR355 (used for SARA 302 and 304).

Components present in this product at a level which could require reporting under the statute are: NONE.

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40CFR372 (for SARA 313). This information must be included in MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are: NONE.

Massachusetts Right-To-Know Substance List (MSL) – Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are: NONE.

Pennsylvania Right-To-Know Hazardous Substance List – Hazardous Substances and Special Hazardous Substances on the list must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are: NONE.

EPA Hazard Categories (SARA 311, 312): Calcium Silicate- Acute Hazard

California Proposition 65

This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute.

California SCAQMD Rule 443.1 VOCs

15. REGULATORY INFORMATION, Cont'd.

Volatile Organic Components (VOCs) = Substances with vapor pressure of ≥ 0.5 mmHG at 104° C (219.2° F). NOT DETERMINED.

CHEMICAL INVENTORY

<u>Canada:</u>	This product contains a substance not listed on the DSL.
<u>Europe:</u>	The ingredients of this mixture are on the EINECS inventory.
<u>United States:</u>	The components of this product are listed on the TSCA inventory or are exempt.
<u>Australia:</u>	This product, or the components, is listed or exempt from listing on the Australian Inventory of Chemical Substances (AICS).
<u>Japan:</u>	This product, or the components, is listed or exempt from listing on the Existing and New Chemical Substances (ENCS) list.

16. OTHER INFORMATION**RECOMMENDED USES AND RESTRICTIONS**

Please consult the product and/or application information bulletins for this product.

HMIS RATING

Health: 2	Flammability: 1	Reactivity: 1	PPI: X
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LEGEND

STP	Standard temperature and pressure
W/W	Weight/Weight
0 (HMIS)	Minimal Hazard
1 (HMIS)	Slight Hazard
2 (HMIS)	Moderate Hazard
3 (HMIS)	Serious Hazard
4 (HMIS)	Severe Hazard
X (HMIS)	Personal protection rating to be supplied by user depending on use conditions.

Revision Note: Nomenclature change from NXT-18 DLC to NX-18 DLC.

Date Revised: November 15, 2004

Prepared by: J. Craig Moore

Title: Safety Coordinator

N/A = Not applicable N/D = Not determined N/DA = No Data Available

N/E = Not established

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