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MATERIAL SAFETY DATA SHEET

StarChem LLC
Product Safety & Regulatory Affairs
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USA

TRANSPORTATION EMERGENCY
CALL CHEMTREC: (800) 424-9300

NON-TRANSPORTATION
StarChem LLC Emergency : (864) 949-2162
StarChem LLC Information : (866) 377-5269

1. Product and Company Identification

Product Name: STARCHEM TEA 85
Material Number: 03706013
Chemical Family: Alkanolamine

2. Hazards Identification

Emergency Overview

CAUTION! Color: light yellow **Form:** liquid **Odor:** Ammoniacal.
May cause eye irritation. Isolate area.

Potential Health Effects

Primary Routes of Entry: Skin Contact, Eye Contact, Ingestion, Inhalation

Medical Conditions Aggravated by Exposure: Skin disorders, Respiratory disorders, Eye disorders

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Inhalation
Acute Inhalation
For Product: STARCHEM TEA 85
At room temperature, exposure to vapor is minimal due to low volatility; vapor from heated material may cause respiratory irritation.

Skin
Acute Skin
For Product: STARCHEM TEA 85

Prolonged exposure not likely to cause significant skin irritation. Repeated exposure may cause irritation, even a burn.

Eye
Acute Eye
For Product: STARCHEM TEA 85
May cause moderate eye irritation. Corneal injury is unlikely.

Ingestion
Acute Ingestion
For Product: STARCHEM TEA 85
Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

General Effects of Exposure
Chronic Effects of Exposure
For Product: STARCHEM TEA 85
In animals, effects have been reported on the following organs: Kidney. Liver.

Carcinogenicity:
Findings from a chronic triethanolamine skin painting study by NTP include liver tumors in mice. Mechanistic studies indicate that tumor formation is of questionable relevance to humans. Findings from a chronic diethanolamine skin painting study by NTP include liver and kidney tumors in mice; no tumors were observed in rats. Mechanistic studies indicate that tumor formation is of questionable relevance to humans.

3. Composition/Information on Ingredients

Hazardous Components

Weight %	Components	CAS-No.
84 - 86%	Triethanolamine	102-71-6
14 – 16%	Water	7732-18-5
<0.153%	N,N-Diethanolamine	111-42-2

4. First Aid Measures

Eye Contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Skin Contact: Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands.

Inhalation: Move person to fresh air; if effects occur, consult a physician.

Ingestion: No emergency medical treatment necessary.

Notes to Physician: If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire-Fighting Measures

Extinguishing Media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Do not use direct water stream. May spread fire. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide.

6. Accidental release measures

Steps to be Taken if Material is Released or Spilled: Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. Small spills: Dilute with water. Recover spilled material if possible. Absorb with materials such as: Non-combustible material. Sand. Remove with shovel. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

Personal Precautions: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage

Handling

General Handling: Thaw and mix well before using. Avoid contact with eyes. Wash thoroughly after handling. Do not use sodium nitrite or other nitrosating agents in formulations containing this product.

Suspected cancer-causing nitrosamines could be formed. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Storage
Avoid freezing. Store under an oxygen-free nitrogen atmosphere. Store in a dry place. Do not store in: Copper. Copper alloys. Galvanized containers.

Storage temperature: > 16 deg C
Storage Period:, Bulk 6 Months
Storage Period:, Metal drums., Plastic drums., Steel drums. 24 Months

8. Exposure Controls / Personal Protection

Country specific exposure limits have not been established or are not applicable

Exposure Limits

Component	List	Type	Value	
Triethanolamine	ACGIH	TWA	5 mg/m3	
N,N-Diethanolamine	ACGIH	TWA	1 mg/m3 Inhalable fraction and vapor.	SKIN

Personal Protection

Eye/Face Protection: Use chemical goggles.

Skin Protection: When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, boots, apron, or full-body suit will depend on the task.

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if handling at elevated temperatures without sufficient ventilation, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge.

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls
Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and chemical properties

Form:	liquid
Appearance:	clear
Color:	yellow
Odor:	Ammoniacal
pH:	Not determined
Melting Point:	-5 deg C
Boiling Point/Range:	119.1 deg C
Flash Point:	>208 deg C (>406 deg F) ASTM D93
Lower Explosion Limit:	Not Established
Upper Explosion Limit:	Not Established
Vapor Pressure:	Not Established
Specific Gravity:	1.123
Solubility in Water:	Soluble

10. Stability and Reactivity

Stability/Instability
Stable under recommended storage conditions. See Storage, Section 7. Hygroscopic.

Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid moisture.

Incompatible Materials: Avoid contact with: Nitrites. Strong acids. Strong oxidizers. Product may potentially react with various halogenated organic solvents, resulting in temperature and/or pressure increases Corrosive when wet. Heating above 60 deg C in the presence of aluminum can result in corrosion and generation of flammable hydrogen gas. Avoid unintended contact with: Halogenated hydrocarbons.

Hazardous Polymerization
Will not occur.

Thermal Decomposition
Decomposition products depend upon temperature, air supply and the presence of other materials.

11. Toxicological Information

Acute Toxicity

Ingestion
LD50, Rat 5,000 - 9,600 mg/kg

Skin Absorption
LD50, Rabbit > 2,000 mg/kg

Sensitization
Skin
Skin contact may cause an allergic skin reaction in a small proportion of individuals. Did not cause allergic skin reactions when tested in guinea pigs.

Repeated Dose Toxicity
In animals, effects have been reported on the following organs: Kidney. Liver.

Chronic Toxicity and Carcinogenicity
Findings from a chronic triethanolamine skin painting study by NTP include liver tumors in mice. Mechanistic studies indicate that tumor formation is of questionable relevance to humans.

N,N-Diethanolaime	IARC	Possibly carcinogenic to humans; 2B
	ACGIH	Confirmed animal carcinogen with unknown Relevance to humans; Group A3

Developmental Toxicity
Screening studies in animals suggest that this material does not affect fetal development.

Genetic Toxicology
In vitro genetic toxicity studies were negative.

12. Ecological Information

Movement & Partitioning
Bioconcentration potential is low (BCF less than 100 or log Pow less than 3).
Potential for mobility in soil is very high (Koc between 0 and 50).
Henry's Law Constant (H): 1.91E-4 atm*m3/mole Measured
Partition coefficient, n-octanol/water (log Pow): -1.00 Measured
Partition coefficient, soil organic carbon/water (Koc): 3 Estimated
Bioconcentration Factor (BCF): < 3.9; common carp (Cyprinus carpio);Measured
Distribution in Environment: Mackay Level I Fugacity Model:

Air	Water.	Biota	Soil	Sediment
	> 99 %			

Persistence and Degradability
Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).
Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
110.53E-12 cm3/s	0.097 d	Estimated

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
97 %	28 d	OECD 301A Test
89%	14d	OECD 302B Test
92 %	3 h	OECD 303A Test

Theoretical Oxygen Demand: 2.04 mg/mg

ECOTOXICITY

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms.

Fish Acute & Prolonged Toxicity
LC50, fathead minnow (Pimephales promelas), 96 h: 1,800 - 11,800 mg/L

Aquatic Invertebrate Acute Toxicity
LC50, water flea Daphnia magna, 24 h: 739 - 2,038 mg/L

Aquatic Plant Toxicity
EC50, alga Scenedesmus sp., Growth rate inhibition, 72 h: 216 - 750 mg/L

Toxicity to Micro-organisms
EC50, OECD 209 Test; activated sludge, respiration inhibition, 3 h: > 1,000 mg/L

13. Disposal considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

14. Transportation information

Land transport (DOT)
Non-Regulated (Non-bulk)

Land transport (DOT Bulk)
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S
Technical Name: CONTAINS DIETHANOLAMINE
Hazard Class: 9
ID Number: UN3082
Packing Group: PG III

Sea transport (IMDG)
Non-Regulated

Air transport (ICAO/IATA)
Non-Regulated

Reportable quantity = 65,539 lb - DIETHANOLAMINE

15. Regulatory Information

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	No
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Triethanolamine	102-71-6	84 - 86 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING! This product contains a chemical(s) known to the State of California to cause cancer.

Component	CAS#	Amount
N,N-Diethanolamine	111-42-2	<0.153%

US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30
CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

16. Other Information

NFPA 704M Rating

Health	1
Flammability	1
Reactivity	0
Other	

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

HMIS Rating

Health	1
Flammability	1
Physical Hazard	0

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe
* = Chronic Health Hazard

StarChem LLC 's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by StarChem LLC as a customer service.

Contact Person:	Product Safety Department
Tele:	(866) 377-5269
Version Date:	3/27/2014
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