1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US:
703-527-3887 (Collect Calls Accepted)

SUBSTANCE: NANOCHEM(R) DPX

TRADE NAMES/SYNONYMS:
MATNE519

PRODUCT USE: For Use with Gases: Chlorine (Cl2), Monochlorosilane (SiH3Cl), Dichlorosilane (SiH2Cl2), Trichlorosilane (SiHCl3). As a service to our customers, Matheson Gas Products has identified this Material Safety Data Sheet with the intended gas for which the accompanying purifier will be used. The data herein is reflective of the purification media, as shipped under an argon pressure of 5-15 psig. Once the purifier is installed and exposed to the intended process gas, the MSDS for the process gas must also be consulted in conjunction with this MSDS to determine the appropriate hazards.

CREATION DATE: Mar 26 1998
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: METAL OXIDES, TRADE SECRET
CAS NUMBER: Not assigned.
PERCENTAGE: 90-99

COMPONENT: METAL CHLORIDES, TRADE SECRET
CAS NUMBER: Not assigned.
PERCENTAGE: 1-10

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3  FIRE=0  REACTIVITY=1

EMERGENCY OVERVIEW:
PHYSICAL FORM: White, free flowing solid encased in stainless steel cylinder under 5-15 psig inert gas pressure.
ODOR: pungent odor

MAJOR HEALTH HAZARDS: No significant target effects reported.

POTENTIAL HEALTH EFFECTS:

INHALATION:
SHORT TERM EXPOSURE: This product is considered to be nonhazardous, however the following effects may occur as a result of damage to the product: irritation (possibly severe)
LONG TERM EXPOSURE: See short term effects.

SKIN CONTACT:
SHORT TERM EXPOSURE: This product is considered to be nonhazardous, however the following effects may occur as a result of damage to the product: burns
LONG TERM EXPOSURE: See short term effects.

EYE CONTACT:
SHORT TERM EXPOSURE: This product is considered to be nonhazardous, however the following effects may occur as a result of damage to the product: burns
LONG TERM EXPOSURE: See short term effects.

INGESTION:
SHORT TERM EXPOSURE: This product is considered to be nonhazardous, however the following effects may occur as a result of damage to the product: irritation (possibly severe)
LONG TERM EXPOSURE: See short term effects.

4. FIRST AID MEASURES

INHALATION: It is unlikely that emergency treatment will be required.

EYE CONTACT: It is unlikely that emergency treatment will be required. However, in case of contact with compound, immediately flush with plenty of low pressure water for at least 20 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician. In case of contact with hydrogen chloride vapors, wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). If burns occur, proceed with the following: Cover affected area securely with sterile, dry, loose-fitting dressing. Treat symptomatically and supportively. Get medical attention immediately.

INGESTION: The system is sold as a sealed unit and exposure to the compound via ingestion is not expected. If ingestion does occur, call a physician. Avoid gastric lavage or emesis. Give large amounts of water or milk. Repeat if vomiting occurs. Never make an unconscious person vomit or drink fluids. If vomiting occurs, keep head lower than hips to help prevent aspiration. Maintain airway and respiration. Treat symptomatically and supportively. Get medical attention immediately.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard as long as the container is not punctured or a wrong gas such as pure oxygen is not accidentally piped to the canister.
**EXTINGUISHING MEDIA:** regular dry chemical, dry sand, lime, soda ash

**FIRE FIGHTING:** Do not use water. Do not use foam. Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products.

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### 6. ACCIDENTAL RELEASE MEASURES

**OCCUPATIONAL RELEASE:**
Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if possible without personal risk. Do not get water directly on material. Small spills: Collect material into suitable, loosely covered container for disposal. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

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### 7. HANDLING AND STORAGE

**STORAGE:** Store and handle in accordance with all current regulations and standards. Store at ambient temperatures with contents under dry inert gas pressure at 5-15 psig. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355 Part B). See original container for storage recommendations. Keep separated from incompatible substances.

**HANDLING:** Subject to handling regulations: U.S. OSHA 29 CFR 1910.119. Use methods to minimize dust.

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### 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

**EXPOSURE LIMITS:**

**NANOCHEM(R) DPX:**

**HYDROGEN CHLORIDE (HYDROCHLORIC ACID):**
- 5 ppm (7 mg/m3) OSHA ceiling
- 2 ppm ACGIH ceiling
- 5 ppm (7 mg/m3) NIOSH recommended ceiling

**VENTILATION:** Not required during normal system use. In the event of system rupture, media removal from the system, or exposure to the media: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

**EYE PROTECTION:** Not required during normal system use. In the event of system rupture, media removal from the system, or exposure to the media: Wear splash resistant safety goggles with a faceshield.
Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**CLOTHING:** Not required during normal system use. In the event of system rupture, media removal from the system, or exposure to the media: Wear appropriate chemical resistant clothing.

**GLOVES:** Not required during normal system use. In the event of system rupture, media removal from the system, or exposure to the media: Wear appropriate chemical resistant gloves.

**RESPIRATOR:** Not required during normal system use. In the event of system rupture, media removal from the system, or exposure to the media: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

**50 ppm**
- Any air-purifying half-mask respirator equipped with cartridge(s) providing protection against the compound of concern.
- Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.
- Any powered, air-purifying respirator with cartridge(s) providing protection against this substance.
- Any supplied-air respirator.
- Any self-contained breathing apparatus with a full facepiece.

Emergency or planned entry into unknown concentrations or IDLH conditions -
- Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
- Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

**Escape** -
- Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted acid gas canister.
- Any appropriate escape-type, self-contained breathing apparatus.

**For Unknown Concentrations or Immediately Dangerous to Life or Health** -
- Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
- Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

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### 9. PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE:** solid  
**PHYSICAL FORM:** White, free flowing solid encased in stainless steel cylinder under 5-15 psig inert gas pressure.  
**ODOR:** pungent odor  
**BOILING POINT:** Not applicable  
**MELTING POINT:** Not available  
**VAPOR PRESSURE:** negligible  
**VAPOR DENSITY:** Not applicable
SPECIFIC GRAVITY: Not available
DENSITY: 0.73 g/cc
WATER SOLUBILITY: reacts
PH: acidic in solution
VOLATILITY: negligible
ODOR THRESHOLD: 1-5 ppm (HYDROGEN CHLORIDE VAPOR (CANISTER HEAD SPACE))
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

10. STABILITY AND REACTIVITY

REACTIVITY: Compound reacts with water or moist air to liberate hydrogen chloride.

CONDITIONS TO AVOID: Avoid contact with air. Keep dry. Keep out of water supplies and sewers.

INCOMPATIBILITIES: amines, bases

HAZARDOUS DECOMPOSITION:
Thermal decomposition products or contact with water or moisture: hydrogen chloride

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

Not available

12. ECOLOGICAL INFORMATION

Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. If the purification system is ever exposed to toxic gases or gases containing toxic elements, the media may contain these toxic materials, or reaction products thereof, and exhibit the characteristic of toxicity as defined in the hazardous waste regulations 40 CFR 261 Subpart C or D. System Recharge: The customer may consult Matheson PBU for the disposal and recharge of the system. Systems used to purify reactive or flammable gases must be thoroughly purged with an inert gas prior to disposal.
14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Corrosive solids, n.o.s. (CONTAINS SUPPORTED METAL CHLORIDE)
ID NUMBER: UN1759
HAZARD CLASS OR DIVISION: 8
PACKING GROUP: II
LABELING REQUIREMENTS: 8

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Corrosive solid, n.o.s. (CONTAINS SUPPORTED METAL CHLORIDE)
UN NUMBER: UN1759
CLASS: 8
PACKING GROUP/CATEGORY: II

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): 5000 LBS RQ (liquid)

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): 500 LBS TPQ (gas)

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): 5000 LBS RQ (gas)

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: No
CHRONIC: No
FIRE: No
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): except non-aerosol forms

OSHA PROCESS SAFETY (29 CFR 1910.119):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): 5000 LBS TQ (gas)
STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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