1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS: SILANE > 1.0-15.0% / NITROGEN (BALANCE) GAS MIXTURE

CHEMICAL FAMILY: Silicon Hydride / Inert Gas Mixture  PRODUCT USE: Semi-Conductor Gas

MANUFACTURER

MATHESON TRI-GAS, INC.

150 ALLEN ROAD, Ste 302
BASKING RIDGE, NJ  07920
USA

Phone:  973/257-1100

EMERGENCY PHONE: CHEMTREC (U.S. DOMESTIC):  1-800-424-9300
CHEMTREC INTERNATIONAL:  1-703-527-3887
CANUTEC (CANADA):     1-613-996-6666

NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Product Description: This is a colorless, highly-flammable gas mixture with a disagreeable odor. Health Hazards: The main health hazard associated with releases of this gas mixture is the potential for severe thermal burns as the Silane component of this gas mixture ignites very readily. An additional health hazard may be asphyxiation by displacement of oxygen. Due to the presence of Silane, prolonged contact may be irritating to contaminated tissue. Flammability Hazards: This gas mixture presents a serious fire hazard if accidentally released. Releases of this gas mixture will spread long distances; ignition or flash-back from a distance is possible. Flame or high temperature impinging on a localized area of the cylinder can cause cylinder to rupture violently or explosively. If this gas mixture is released at high pressure or high velocity, a hazard of delayed detonation may exist. Reactivity Hazards: This gas mixture is not reactive. Environmental Hazards: This gas mixture has not been tested for environmental effects. All release to the environment should be avoided. Emergency Response Considerations: Releases of this gas mixture that have not ignited must be considered extremely dangerous and should not be approached. Provide adequate fire protection during emergency response.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of over-exposure for this gas are by inhalation, skin or eye contact.

INHALATION: Prolonged contact via inhalation may be mildly irritating to the respiratory system due to the formation of silicic acid upon contact with moisture in the lungs. Symptoms may include coughing. Symptoms should be alleviated upon removal to fresh air. Although unlikely to occur, inhalation of high concentrations of this gas mixture may also result in headache and nausea. The chief health hazard associated with this gas is asphyxiation after inhalation of oxygen-deficient environments. If large volumes of this gas are released, or if this gas is released in poorly ventilated areas (i.e., enclosed or confined spaces), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms that include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of overexposure, death may occur.
2. HAZARD IDENTIFICATION (Continued)

INHALATION (continued): The effects associated with various levels of oxygen are as follows:

<table>
<thead>
<tr>
<th>CONCENTRATION OF OXYGEN</th>
<th>OBSERVED EFFECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-16% Oxygen:</td>
<td>Breathing and pulse rate increase, muscular coordination slightly disturbed.</td>
</tr>
<tr>
<td>10-14% Oxygen:</td>
<td>Emotional upset, abnormal fatigue, disturbed respiration.</td>
</tr>
<tr>
<td>6-10% Oxygen:</td>
<td>Nausea, vomiting, collapse, or loss of consciousness.</td>
</tr>
<tr>
<td>Below 6%:</td>
<td>Convulsive movements, possible respiratory collapse, and death.</td>
</tr>
</tbody>
</table>

WARNING: Exposure to atmospheres containing 8-10% or less oxygen will bring about unconsciousness without warning and so quickly that individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death.

It must be noted that the lower flammability limit of Silane may be met, causing fire, before an oxygen-deficient atmosphere may occur.

CONTACT WITH SKIN or EYES: Depending on the duration of skin contact, skin overexposures may cause irritation to contaminated skin. Repeated low level skin exposure may cause dermatitis (dry, red skin). Irritation to the eyes may occur due to the formation of Silicic acid and hydrated silica upon contact with moisture in the eyes. Contact with rapidly expanding gases (which are released under high pressure) may cause frostbite. In addition, the sudden release of a pressurized gas (such as may occur in the event of a valve failure) presents a severe hazard of mechanical injury. If this gas ignites, thermal burns.

SKIN ABSORPTION: The components of this gas mixture are not known to be absorbed via intact skin.

OTHER POTENTIAL HEALTH EFFECTS: The chief health hazard presented by this gas mixture is that it will ignite so rapidly, personnel in the area of a release can receive severe thermal burns.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: Over-exposure to this gas mixture may cause the following health effects:

ACUTE: The most significant hazard associated with this gas is inhalation of oxygen-deficient atmospheres. The gas mixture may be mildly irritating to the respiratory system, skin and eyes. Contact with rapidly expanding gases during accidental release may cause frostbite. Eye and skin contact or inhalation may cause irritation due to formation of Silicic acid.

CHRONIC: Although no good data is available, persistent irritation may result from repeated, low-level exposure to this gas mixture. Chronic exposure to oxygen-deficient atmospheres (below 18% oxygen in air) may affect the heart and nervous system.

TARGET ORGANS: ACUTE: Respiratory system, skin, eyes. CHRONIC: Respiratory system, skin, heart, central nervous system.

HMIS RATING: HEALTH HAZARD = 1 FLAMMABILITY HAZARD = 4 PHYSICAL HAZARD = 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

3. COMPOSITION and INFORMATION ON INGREDIENTS

(10,000 ppm = 1%)

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS #</th>
<th>mole %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silane</td>
<td>7803-62-5</td>
<td>&gt; 1.0-15.0%</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>7727-37-9</td>
<td>Balance</td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES

GENERAL INFORMATION: RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS GAS MIXTURE WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus and Fire-Retardant clothing must be worn. Remove to fresh air, as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Seek medical attention immediately if adverse effect continues after removal to fresh air.
4. FIRST-AID MEASURES (Continued)

SKIN EXPOSURE: Rinse exposed skin for 15 minutes if any irritation adverse effects occur. If release of this gas mixture has resulted in frostbite, warm affected area slowly. Seek immediate medical attention.

EYE EXPOSURE: If release of this gas mixture has affected the eyes, seek immediate medical attention.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Respiratory, skin and eye conditions may be aggravated by this gas mixture.

RECOMMENDATIONS TO PHYSICIANS: Administer oxygen. Treat symptoms and eliminate overexposure.

THERMAL BURNS: In the event personnel are burned as a result of a release, if burns are first degree or second degree with closed blisters, flush area with cold water until pain subsides. Apply loose, moist, sterile dressings, and bandage. Treat for shock. If burns are second degree with open blisters or third degree, apply loose, dry, sterile dressings and bandage. Treat for shock. Transport victim immediately to hospital or emergency center. Burns over an area of 20% or more of body are life-threatening, medical attention should be immediately sought.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable for a flammable gas; will ignite upon release to air.

AUTOIGNITION TEMPERATURE: Not determined. Silane is pyrophoric.

FLAMMABLE LIMITS (in air by volume, %): Not determined for mixture. For Silane: LEL = 1.4%, UEL = 96.0 (est.)

FIRE EXTINGUISHING MATERIALS: Extinguish fires of this gas by shutting-off the source of the gas. Use water spray to cool fire-exposed containers, structures, and equipment. Water spray, dry chemical and Carbon Dioxide extinguishers can be used on fire of surrounding materials.

FIRE EXTINGUISHING MATERIALS NOT TO BE USED: Do NOT use halogenated extinguishing materials.

UNUSUAL FIRE AND EXPLOSION HAZARD: DANGER! This gas is extremely flammable and readily forms explosive mixtures with air over a very wide range. If released into a confined space, an extreme fire hazard exists. Cylinders, when involved in a fire, may rupture or burst in the heat of the fire.

EXPLOSION SENSITIVITY TO MECHANICAL IMPACT: Not sensitive.

EXPLOSION SENSITIVITY TO STATIC DISCHARGE: Static discharge may cause this gas mixture to ignite explosively.

SPECIAL FIRE-FIGHTING PROCEDURES: Evacuate all personnel from danger area. Immediately cool cylinders with water spray from maximum distance, taking care to NOT extinguish flames if source of gas has not been stopped. If possible, stop the leak and flow of gas before extinguishing fire. If release is still occurring after the fire has been extinguished, there is a possibility that explosive re-ignition may occur. In event that fire is extinguished before the leak is stopped, attempt to increase ventilation to area to prevent formation of explosive air/gas mixtures. Incipient fire responders should wear eye protection. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment. When cool, move cylinders from fire area if this can be done without risk to firefighters. Other information for pre-planning can be found in the American Petroleum Institute Publications 2510 and 1510A, and the North American Emergency Response Guidebook (Guide Number 115).

6. ACCIDENTAL RELEASE MEASURES

LEAK RESPONSE: Evacuate immediate area. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Eliminate any possible source of ignition and provide maximum explosion-proof ventilation. Proper protective equipment, including fire protection, should be used in the event of a significant release from a single cylinder. Use only non-sparking tools. Call CHEMTREC (1-800-424-9300) for emergency assistance. Or if in Canada, call CANUTEC (613-996-6666).

Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in-place or remove it to a safe area and allow the gas to be released there. Protect personnel attempting to shut-off with water spray.
6. ACCIDENTAL RELEASE MEASURES (Continued)

LEAK RESPONSE (continued): Monitor the surrounding area for combustible gas levels and the level of Oxygen. The atmosphere must have not more than 10% of the LEL of each component gas (see Section 5, Fire-Fighting Measures) and at least 19.5 percent Oxygen before non-emergency personnel can be allowed in the area without Self-Contained Breathing Apparatus, chemically-resistant clothing and fire protection.

7. HANDLING and USE

WORK PRACTICES AND HYGIENE PRACTICES

Do not eat or drink while handling chemicals.

Be aware of all potential exposure symptoms; exposures to a fatal oxygen-deficient atmosphere could occur without any significant warning symptoms.

All work operations should be monitored in such a way that emergency personnel can be immediately contacted in the event of a release.

Workers who handle this gas mixture should wear protective clothing, as listed in Section 8 (Exposure Controls and Personal Protection).

If ventilation controls are not adequate to keep exposure limits of components below levels listed in Section 8, Exposure Controls and Personal Protective Equipment on Ingredients and provide sufficient oxygen content, proper respiratory protection equipment should be provided and workers using such equipment should be carefully trained in its operation and limitations.

Precautions must always be taken to prevent suck-back of foreign materials into the cylinder by using a check-valve, or vacuum break, since suck-back may cause dangerous pressure changes within the cylinder.

STORAGE AND HANDLING PRACTICES:

Cylinders should be stored upright and be firmly secured to prevent falling or being knocked-over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting. Cylinders should be stored in dry, well-ventilated areas away from sources of heat or ignition. Do not allow the area where cylinders are stored to exceed 52°C (125°F).

Cylinders should be separated from oxygen cylinders, or other oxidizers, by a minimum distance of 20 ft., or by a barrier of non-combustible material at least 5 ft. high, having a fire-resistance rating of at least 0.5 hours. Isolate from other incompatible chemicals (refer to Section 10, Stability and Reactivity). Storage areas must meet National Electrical Codes for Class 1 Hazardous Areas. Post "No Smoking or Open Flames" signs in storage or use areas. Consider leak detection and alarm for storage and use areas. Have appropriate extinguishing equipment in storage area (i.e. sprinkler system, portable fire extinguishers).

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Compressed gases can present significant safety hazards. The following rules are applicable to work situations in which cylinders are being used.

Before Use: Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap (where provided) in-place until cylinder is ready for use.

During Use: Use designated CGA fittings and other support equipment. Do not use adapters. Do not use oils or grease on gas-handling fittings or equipment. Immediately contact the supplier if there are any difficulties associated with operating the cylinder valve. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage the valve, causing a leak to occur. Use an adjustable strap wrench to remove over-tight or rusted caps. Never strike an arc, on a compressed gas cylinder or make a cylinder part of an electric circuit.

After Use: Close main cylinder valve. Replace valve protection cap. Close valve after each use and when empty. Mark empty cylinders “EMPTY”.

SPECIAL PRECAUTIONS FOR HANDLING SILANE MIXTURES:

• Do not condense this gas mixture; avoid temperature of -100°C (-148°F) of less. Condensation of mixtures containing Silane run the risk of development of leaks due to the sucking back of air into the system, resulting in formation of explosive mixtures.

• Do not use this gas mixture in conjunction with heavy-metal halides or free halogens, with which the Silane component may react violently. Care should be taken that all handling systems are purged free of halogens that might exist from degreasing agents or chlorinated halogens.

• Evacuate and thoroughly pressure-check all systems, preferably with Nitrogen, for leaks at pressures two to three times the anticipated working pressure. A policy of regular leak-testing should be instituted and performed.
7. HANDLING and USE (Continued)

SPECIAL PRECAUTIONS FOR HANDLING SILANE MIXTURES (continued):
- Use and alternate vacuum and inert gas purge cycles of the system to purge all air of the system after it has been leak-tested or opened for any reason.
- Before disconnecting any system that has had a Silane mixture, thoroughly purge the system with an inert gas. Any portion of the system that is dead-ended or allows “pocketing” of this mixture should be treated with considerable vacuum-purge cycles.
- Vent this mixture through a small-diameter pipe or tubing ending under a shallow seal to prevent back diffusion of air. Venting should be to an area designed for proper disposal of a Silane mixture, preferably by burning. Concentrations, even in the low percentage range, are dangerous, and should not be exposed to air. This mixture may also be vented by diluting with additional inert gas to prevent ignition.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Refer to current CGA Guidelines for information on protective practices during maintenance of contaminated equipment.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate, explosion-proof ventilation to ensure compliance with exposure limits described in this section, if applicable. Local exhaust ventilation is preferred, because it prevents dispersion of this gas mixture into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the level of Oxygen.

EXPOSURE LIMITS:

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS #</th>
<th>ACGIH-TLVs</th>
<th>OSHA-STELs</th>
<th>NIOSH-RELs</th>
<th>NIOSH</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>TWA ppm</td>
<td>STEL ppm</td>
<td>TWA ppm</td>
<td>STEL ppm</td>
<td>IDLH ppm</td>
</tr>
<tr>
<td>Silane</td>
<td>7803-62-5</td>
<td>5</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>7440-59-7</td>
<td>There are no specific exposure limits for Nitrogen. Oxygen levels should be maintained above 19.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESPIRATORY PROTECTION: Maintain the Oxygen level above 19.5% in the workplace. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), or equivalent U.S. State standards and Canadian CSA Standard Z94.4-93. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA’s Respiratory Protection Standard (1910.134-1998).


HAND PROTECTION: Wear mechanically-resistant gloves when handling cylinders containing this gas mixture. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate for task. Transfer of large quantities under pressure may require protective equipment appropriate to the task. If necessary, refer to the OSHA Technical Manual (Section VII: Personal Protective Equipment) or appropriate Standards of Canada. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee’s feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136 and the Canadian CSA Standard Z195-02, Protective Footwear.

9. PHYSICAL and CHEMICAL PROPERTIES

The following information is for Nitrogen, the main component of this gas mixture:

- GAS DENSITY: 0.072 lb/cu ft (1.153 kg/m³)
- SPECIFIC GRAVITY (air = 1): 0.967
- SOLUBILITY IN WATER: 0.023
- EXPANSION RATIO: Not applicable.
- ODOR THRESHOLD: Not applicable.
- VAPOR PRESSURE (psia): Not applicable.
- COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

SILANE (> 1.0-15.0%)/NITROGEN (Balance) GAS MIXTURE MSDS
EFFECTIVE DATE: JUNE 8, 2008
PAGE 5 OF 10
MATH0032
MATHESON TRI-GAS
9. PHYSICAL and CHEMICAL PROPERTIES (Continued)

The following information is for the Silane component of this gas mixture.

- **GAS DENSITY:** 0.0899 lb/cu ft (1.44 kg/m³)
- **EVAPORATION RATE** (nBuAc = 1): Not applicable.
- **SPECIFIC GRAVITY @ 20°C (air = 1):** 1.1
- **FREEZING POINT:** -184.7°C (-300.5°F)
- **SOLUBILITY IN WATER:** Negligible.
- **BOILING POINT @ 1 atmos.:** -117°C (-169°F)
- **EXPANSION RATIO:** Not applicable.
- **SPECIFIC VOLUME (ft³/lb):** 12.0
- **MOLECULAR WEIGHT:** 32.1
- **VAPOR PRESSURE @ 20°C:** > 101.3 kPa (> 760 mmHg)
- **COEFFICIENT WATER/OIL DISTRIBUTION:** Not determined.

The following information is pertinent to this product:

- **APPEARANCE, ODOR and COLOR:** This gas mixture is a colorless gas mixture with a disagreeable odor (due to the presence of Silane).

- **HOW TO DETECT THIS SUBSTANCE (warning properties):** There are no distinct warning properties of this gas mixture. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

10. STABILITY and REACTIVITY

- **STABILITY:** Stable at standard temperatures and pressures.

- **DECOMPOSITION PRODUCTS:** Combustion: Silicon oxides and hydrogen. Hydrolysis: Silicic acid and hydrated silica.

- **MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:** The component of greatest percentage, Nitrogen is inert. The Silane component is incompatible with halogens (bromine, chlorine, carbonyl chloride, antimony pentachloride, tin(IV) chloride), air, and water.

- **HAZARDOUS POLYMERIZATION:** Will not occur.

- **CONDITIONS TO AVOID:** Contact with incompatible materials. Cylinders exposed to high temperatures or direct flame can rupture or burst.

11. TOXICOLOGICAL INFORMATION

- **TOXICITY DATA:** The Nitrogen component is a simple asphyxiant, which act to displace oxygen in the environment. No toxicity data are applicable. The following data are for Silane:

  - **SILANE:**
    - LC50 (Inhalation-Rat) 9600 ppm/4 hours
    - LC50 (Inhalation-Mouse) 9600 ppm/4 hours
    - Mutation in Microorganisms (Bacteria-Salmonella typhimurium) 1 ppm

- **CARCINOGENIC POTENTIAL OF COMPONENTS:** No component of this gas mixture is listed by agencies tracking the carcinogenic potential of chemical compounds. The components of this gas mixture are not found on the following lists: U.S. EPA, U.S. NTP, U.S. OSHA, U.S. NIOSH, GERMAN MAK, IARC, or ACGIH, and therefore are not considered to be, nor suspected to be cancer-causing agents by these agencies.

- **IRRITANCY OF PRODUCT:** This gas mixture may be mildly irritating to contaminated tissue, depending on the duration of contact. Silane reacts with water or moisture, slowly producing Silicic acid and hydrated silica; therefore, this gas can be mildly irritating to the skin, the eyes, and mucous membranes.

- **SENSITIZATION TO THE PRODUCT:** The components of this gas mixture are not known to cause human skin or respiratory sensitization.

- **REPRODUCTIVE TOXICITY INFORMATION:** Listed below is information concerning the effects of the components of this gas mixture on the human reproductive system.
  - **Mutagenicity:** The components of this gas mixture are not reported to cause mutagenic effects in humans.
  - **Embryotoxicity:** The components of this gas mixture are not reported to cause embryotoxic effects in humans.
  - **Teratogenicity:** The components of this gas mixture are not reported to cause teratogenic effects in humans.
  - **Reproductive Toxicity:** The components of this gas mixture are not reported to cause reproductive effects in humans.

- **BIOLOGICAL EXPOSURE INDICES (BEIs):** Currently, there are no Biological Exposure Indices (BEIs) determined for the components of this gas mixture.

12. ECOLOGICAL INFORMATION

- **ENVIRONMENTAL STABILITY:** This gas mixture will be dissipated rapidly in well-ventilated areas.

- **EFFECT OF MATERIAL ON PLANTS or ANIMALS:** Any adverse effect on animals would be related to the frost produced by rapidly expanding gases.

- **EFFECT OF CHEMICAL ON AQUATIC LIFE:** There are no data on possible adverse effects from this gas mixture on aquatic life.
12. ECOLOGICAL INFORMATION (Continued)

ENVIRONMENTAL EXPOSURE CONTROLS: Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Return cylinders with any residual product to Matheson Tri-Gas. Do not dispose of locally.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION REGULATIONS: This product is classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

<table>
<thead>
<tr>
<th>PROPER SHIPPING NAME:</th>
<th>Compressed gases, flammable, n.o.s. (Nitrogen, Silane)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZARD CLASS NUMBER and DESCRIPTION:</td>
<td>2.1 (Flammable Gas)</td>
</tr>
<tr>
<td>UN IDENTIFICATION NUMBER:</td>
<td>UN 1954</td>
</tr>
<tr>
<td>PACKING GROUP:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>D.O.T. HAZARD LABEL:</td>
<td>Class 2.1 (Flammable Gas)</td>
</tr>
<tr>
<td>NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004):</td>
<td>115</td>
</tr>
</tbody>
</table>

MARINE POLLUTANT: The components of this gas mixture are not classified by the DOT as Marine Pollutant (as defined by 49 CFR 172.101, Appendix B).

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles present serious safety hazards and should be discouraged.

NOTE: Shipment of compressed gas cylinders which have not been filled with the owner's consent is a violation of Federal law [49 CFR, Part 173.301 (b)].

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This gas mixture is classified as dangerous goods, per regulations of Transport Canada.

<table>
<thead>
<tr>
<th>PROPER SHIPPING NAME:</th>
<th>Compressed gas, flammable, n.o.s. (Nitrogen, Silane)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZARD CLASS NUMBER and DESCRIPTION:</td>
<td>2.1 (Flammable Gas)</td>
</tr>
<tr>
<td>UN IDENTIFICATION NUMBER:</td>
<td>UN 1954</td>
</tr>
<tr>
<td>PACKING GROUP:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>HAZARD SHIPPING LABEL(S) REQUIRED:</td>
<td>Class 2.1 (Flammable Gas)</td>
</tr>
<tr>
<td>SPECIAL PROVISIONS:</td>
<td>16</td>
</tr>
<tr>
<td>EXPLOSIVE LIMIT &amp; LIMITED QUANTITY INDEX:</td>
<td>0.125</td>
</tr>
<tr>
<td>ERAP INDEX:</td>
<td>3000</td>
</tr>
<tr>
<td>PASSENGER CARRYING SHIP INDEX:</td>
<td>Forbidden</td>
</tr>
<tr>
<td>PASSENGER CARRYING ROAD OR RAIL VEHICLE INDEX:</td>
<td>Forbidden</td>
</tr>
<tr>
<td>NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004):</td>
<td>115</td>
</tr>
</tbody>
</table>

NOTE: Shipment of compressed gas cylinders via Public Passenger Road Vehicle is a violation of Canadian law (Transport Canada Transportation of Dangerous Goods Act, 1992).

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

Table: U.S. SARA REPORTING REQUIREMENTS

<table>
<thead>
<tr>
<th>U.S. SARA REPORTING REQUIREMENTS</th>
<th>The components of this gas mixture are NOT subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. SARA SECTION 302 EXTREMELY HAZARDOUS THRESHOLD PLANNING QUANTITY (TPQ):</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>U.S. SARA SECTION 304 EXTREMELY HAZARDOUS REPORTABLE QUANTITY (RQ):</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21):</td>
<td>ACUTE: Yes; CHRONIC: No; FIRE: Yes; REACTIVE: No; SUDDEN RELEASE: Yes</td>
</tr>
<tr>
<td>U.S. CERCLA REPORTABLE QUANTITY (RQ):</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>U.S. TSCA INVENTORY STATUS:</td>
<td>Components of this product are listed on the TSCA Inventory.</td>
</tr>
<tr>
<td>OTHER U.S. FEDERAL REGULATIONS:</td>
<td>Silane is subject to the reporting requirements of Section 112(r) of the Clean Air Act. The threshold quantity for this gas is 10,000 lbs (4,540 kg). Silane is listed as Regulated Substances in quantities of 10,000 lbs (4,540 kg) or greater, per 40 CFR, Part 68 of the Risk Management for Chemical Accidental Release.</td>
</tr>
<tr>
<td>CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):</td>
<td>Components of this gas mixture are not on the California Proposition 65 lists.</td>
</tr>
<tr>
<td>LABELING:</td>
<td>Cylinders of this gas mixture should be labeled for precautionary information per the guidelines of the CGA. Refer to the CGA for further information.</td>
</tr>
</tbody>
</table>
DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number that uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.

TWA-Time Weighted Average: An airborne concentration of a substance that represents the exposure that shall not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

STEL-Short Term Exposure Limit: Usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

IDLH-Immediately Dangerous to Life and Health: An airborne concentration of a substance that represents the concentration at which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

EXPOSURE LIMITS IN AIR (continued):

NIOSH RELs: NIOSH’s Recommended Exposure Limits.

OSHA’s Permissible Exposure Limits: This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. OSHA’s Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, “Vacated 1989 PEL,” is placed next to the PEL that was vacated by Court Order.

SKIN: Used when there is a danger of cutaneous absorption.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS: This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

Hazardous Material: 0 (Minimal Hazard): No significant health risk, irritation of skin or eyes not anticipated.

Skin Irritation: Essentially non-irritating. PII or Draize = 0. Eye Irritation: Essentially non-irritating, or minimal effects which clear in < 24 hours (e.g. mechanical irritation). Draize = 0. Oral Toxicity LD50Rat or Rabbit: < 5000 mg/kg. Dermal Toxicity LD50Rat or Rabbit: < 2000 mg/kg. Inhalation Toxicity 4-hrs LC50 Rat or Mouse: < 200 mg/L. 1 (Slight Hazard): Minor reversible or minimal injury may occur. Skin Irritation: Slightly or mildly irritating. Oral Toxicity LD50Rat or Rabbit: > 500-5000 mg/kg. Dermal Toxicity LD50Rat or Rabbit: > 2000-5000 mg/kg. Inhalation Toxicity LC50 4-hrs Rat or Mouse: > 2-20 mg/L. 2 (Moderate Hazard): Temporary or transitory injury may occur. Skin Irritation: Moderately irritating; primary irritant; sensitizer. PII or Draize = 0, < 5. Eye Irritation: Moderately to severely irritating and/or corrosive; reversible corneal opacity; corneal involvement or irritation clearing in 8-21 days. Draize > 0.5, Oral Toxicity LD50Rat or Rabbit: > 50-500 mg/kg. Dermal Toxicity LD50Rat or Rabbit: > 500-1000 mg/kg. Inhalation Toxicity LC50 4-hrs Rat or Mouse: > 1000 mg/L. 3 (Serious Hazard): Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. Skin Irritation: Severely irritating and/or corrosive; may destroy dermal tissue; cause skin burns, dermal necrosis. PII or Draize > 5.8 with destruction of tissue. Eye Irritation: Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. Draize > 8 with effects irreversible in 21 days. Oral Toxicity LD50Rat or Rabbit: > 1-5 mg/kg. Dermal Toxicity LD50Rat or Rabbit: > 20-250 mg/kg. Inhalation Toxicity LC50 4-hrs Rat or Mouse: > 0.5-0.5 mg/L.

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.

PO Box 3519, La Mesa, CA 91944-3519

800/441-3365 / 619/441-3365

MATHESON TRI-GAS

15. REGULATORY INFORMATION (Continued)

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are listed on the DSL Inventory.

CANADIAN OTHER REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LIST: The components of this product are not on the CEPA Priorities Substances List.

CANADIAN WHMIS CLASSIFICATION AND SYMBOLS: This gas mixture would be categorized as a Controlled Product, Hazard Classes: A (compressed gas), B1 (Flammable). The following symbols are required for WHMIS compliance for this gas mixture.
Hazardous Materials Identification System Hazard Ratings (continued):

**Health Hazard (continued):**

4 (Serious Hazard - Life-threatening; major or permanent damage may result from single or repeated exposure. Skin irritation: Not appropriate. Do not rate as a "4", based on skin irritation alone. Eye irritation: Not appropriate. Do not rate as a "4", based on eye irritation alone. Oral Toxicity LD₅₀ Rat: < 1 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit: < 20 mg/kg. Inhalation Toxicity LC₅₀ Rat: < 0.05 mg/L.)

**Flammability Hazard:**

5 (Minor Hazard) - Materials that will not burn in air when exposed to a temperature of 815.3°F (434.9°C) for a period of 5 minutes or less. Liquids, solids and semisolids having a flash point above 150°F (65.6°C) and a boiling point below 220°F (104°C). Materials that are capable of producing hazardous atmospheres in air, including: Liquids having a flash point of at least 150°F (65.6°C) and a boiling point below 220°F (104°C). Solid materials in the form of coarse dusts that may burn rapidly but that generally do not form explosive atmospheres. Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g., cotton, sisal, hemp; solids and semisolids that readily give off flammable vapors.)

3 (Serious Hazard - Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions, including under confinement, but have a low potential for significant heat rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose (S) mixture.

2 (Moderate Hazard - Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres in air, including: Liquids having a flash point of at or above 38°C (100°F) and below 73.8°C (165°F) [e.g. OSHA Class IB and IC]. Materials that on account of their physical form or environmental conditions can form explosive mixtures with air at temperatures above the flash point, but have a low potential for significant heat rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose (S) mixture.

1 (Water Reactive - Materials that will react violently with water or will produce materials that are capable of detonation or explosion if exposed to water. Materials that are capable of decomposing at normal ambient temperature and pressure to produce materials that are highly reactive with water, such as unstable peroxides that are capable of decomposing explosively with water, etc.

National Fire Protection Association Hazard Ratings:

**Health Hazard:**

0 (materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 10,000 mg/L. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 100 mg/L. Any substance whose LD₅₀ for acute toxicity is greater than 2000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 2000 mg/kg. Materials that are essentially non-inflammable to the respiratory tract, eyes and skin.

1 (materials that, under emergency conditions, can cause significant irritation): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 5,000 mg/L but less than or equal to 10,000 mg/L. Materials whose LD₅₀ for acute inhalation toxicity is greater than 10 mg/L but less than or equal to 100 mg/L. Materials whose LD₅₀ for acute oral toxicity is greater than 500 mg/kg but less than or equal to 2000 mg/kg. Materials that cause slight to moderate irritation to the respiratory system, eyes or skin. Materials whose LD₅₀ for acute inhalation toxicity is greater than 0.5 mg/L but less than or equal to 5 mg/L. Materials whose LD₅₀ for acute oral toxicity is greater than 0.5 mg/kg but less than or equal to 5 mg/kg. Materials whose LD₅₀ for acute dermal toxicity is greater than or equal to 500 mg/kg but less than or equal to 2000 mg/kg. Materials whose LD₅₀ for acute dermal toxicity is greater than or equal to 500 mg/kg. Materials whose LD₅₀ for acute dermal toxicity is greater than 2000 mg/kg but less than or equal to 10,000 mg/kg. Materials whose LC₅₀ for acute inhalation toxicity is greater than 1,000 ppm but less than or equal to 5000 ppm. Materials whose LC₅₀ for acute inhalation toxicity is greater than 1,000 ppm. Materials whose LC₅₀ for acute dermal toxicity is greater than or equal to 10 mg/kg but less than or equal to 50 mg/kg. Materials whose LC₅₀ for acute dermal toxicity is greater than or equal to 50 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 0.5 mg/kg but less than or equal to 5 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 5000 mg/L or 50 mg/kg; or, if the liquid has a vapor pressure above 38°C (100°F) and a boiling point below 220°F (104°C) [e.g. OSHA Class IA].

2 (Serious Hazard - Materials that, under emergency conditions, can cause significant incapacitation or residual injury): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 1,000 ppm but less than or equal to 5000 ppm. Materials whose LD₅₀ for acute oral toxicity is greater than or equal to 5 mg/kg but less than or equal to 50 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 5000 mg/L or 50 mg/kg; or, if the liquid has a vapor pressure above 38°C (100°F) and a boiling point below 220°F (104°C) [e.g. OSHA Class IA].

3 (Hazard degree of hazard 4): Compressed liquefied gases with boiling points between -50°C (-58°F) and -150°C (-256°F). Materials that cause severe, but reversible irritation to the eyes or are lachrymators. Materials that are primary skin irritants or sensitizers. Materials that, under emergency conditions, can cause severe to permanent injury. Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 100 ppm but less than or equal to 1000 ppm. Materials whose LC₅₀ for acute inhalation toxicity is greater than 100 ppm. Materials whose LC₅₀ for acute dermal toxicity is greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials whose LC₅₀ for acute dermal toxicity is greater than or equal to 200 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 5000 mg/L or 50 mg/kg; or, if the liquid has a vapor pressure above 38°C (100°F) and a boiling point below 220°F (104°C) [e.g. OSHA Class IA].

4 (Serious Hazard - Materials that, under emergency conditions, can cause severe to permanent injury): Materials that, under emergency conditions, can cause severe to irreversible injury. Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than or equal to 1000 ppm. Materials whose LC₅₀ for acute inhalation toxicity is greater than or equal to 1000 ppm. Materials whose LC₅₀ for acute dermal toxicity is greater than or equal to 10 mg/kg but less than or equal to 50 mg/kg. Materials whose LC₅₀ for acute dermal toxicity is greater than or equal to 50 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 5000 mg/L or 50 mg/kg; or, if the liquid has a vapor pressure above 38°C (100°F) and a boiling point below 220°F (104°C) [e.g. OSHA Class IA].

5 (Major Hazard - Materials that, under emergency conditions, can cause permanent injury or death): Materials that, under emergency conditions, can cause permanent injury or death. Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 10 ppm but less than or equal to 1000 ppm. Materials whose LC₅₀ for acute inhalation toxicity is greater than 10 ppm. Materials whose LC₅₀ for acute dermal toxicity is greater than or equal to 1 mg/kg but less than or equal to 10 mg/kg. Materials whose LC₅₀ for acute dermal toxicity is greater than or equal to 10 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 5000 mg/L or 50 mg/kg; or, if the liquid has a vapor pressure above 38°C (100°F) and a boiling point below 220°F (104°C) [e.g. OSHA Class IA].
DEFINITIONS OF TERMS (Continued)

FLAMMABILITY LIMITS IN AIR:
Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature - The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an igniter source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an igniter source.

TOXICOLOGICAL INFORMATION:
Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: LD₅₀ - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; LC₅₀ - Lethal Concentration (gases) which kills 50% of the exposed animals; ppm - concentration expressed in parts of material per million parts of air or water; mg/m³ - concentration expressed in weight of substance per volume of air; mg/kg - quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include TLs for the lowest dose to cause a symptom; TD₅₀, LD₅₀, and LC₅₀ for the quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include TLs for the lowest dose to cause a symptom; TD₅₀, LD₅₀, and LC₅₀ for the lowest dose (or concentration) to cause lethal or toxic effects. Cancer Information: The sources are: IARC - the International Agency for Research on Cancer; NTP - the National Toxicology Program, RTECS - the Registry of Toxic Effects of Chemical Substances. OSHA and CAL/OSHA, IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other Information: BEI - ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

ECOLOGICAL INFORMATION:
BWF - Bioconcentration Factor, which is used to determine if a substance will concentrate in lifefroms which consume contaminated plant or animal matter. EC is the Effect Concentration in water; EC₅₀ is the Effect Concentration for 50% of the organisms exposed; NOEC is the No Observed Effect Concentration; MATC is the Maximum Acceptable Toxicant Concentration; NOLC is the No Observed Lethal Concentration; TL₅₀ is the median threshold limit; Coefficient of Oil/Water Distribution is represented by log Kow or log Koc and is used to assess a substance's sorption in the environment.

REGULATORY INFORMATION:
U.S. and CANADA: ACGIH: American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. This section explains the impact of various laws and regulations on the material. EPA is the U.S. Environmental Protection Agency. NIOSH is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (OSHA). WSMH is the Canadian Workplace Hazardous Materials Information System. DOT and TC are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (SARA): the Canadian Domestic/Non-Domestic Substances List (DSL/NDSL); the U.S. Toxic Substance Control Act (TSCA); Marine Pollutant status according to the DOT; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund); and various state regulations. This section also includes information on the precautionary warnings which appear on the material's package label. OSHA - U.S. Occupational Safety and Health Administration.

SILANE (> 1.0-15.0%)/NITROGEN (Balance) GAS MIXTURE MSDS

DEFINITIONS OF TERMS (Continued)

FLAMMABILITY HAZARD (continued): 2 Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air: Liquids having a flash point at or above 37.8°C (100°F) (i.e. Class II and Class IIIA liquids.) Solid materials in the form of powders or coarse dusts of representative diameter between 420 microns (40 mesh) and 2 mm (10 mesh) that burn rapidly but that generally do not form explosive mixtures in air. Solid materials in fibrous or shredded form that burn rapidly and create flash fire hazards, such as cotton, sisal and hemp. Solids and semisolids that readily give off flammable vapors. Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. 3 Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions: Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 37.8°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (100°F) (i.e. Class IB and IC liquids). Materials that, on account of their physical form or environmental conditions, can form explosive mixtures with air and are readily dispersed in air. Flammable or combustible dusts with a representative diameter less than 420 microns (40 mesh). Materials that burn with extreme rapidity, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. 4 Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily: Flammable gases. Flammable cryogenic materials. Any liquid or gaseous materials that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. Class IA liquids). Materials that ignite when exposed to air. Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. INSTABILITY HAZARD: 0 Materials that in themselves are normally stable, even under fire conditions: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 25°C (77°F) below 100 W/mL. Materials that are not sensitive to thermal or mechanical shock at elevated temperatures and pressures. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) or below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 50°C (122°F) when tested by differential scanning calorimetry. 1 Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 25°C (77°F) at or above 0.01 W/mL and below 10 W/mL. Materials that readily undergo violent chemical change at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 25°C (77°F) at or above 10 W/mL and below 100 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. 2 Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) or 1000 W/mL or greater. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures.