





Material Safety Data Sheet

| HAZARD WARNINGS | RISK PHRASES | PROTECTIVE CLOTHING |
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|    | <p>Toxic compound, do not ingest or inhale. Avoid all contact with this material.</p> <p>Flammable material; avoid heat and sources of ignition.</p> <p>Corrosive to eyes and skin on contact.</p> <p>Moisture sensitive material.</p> <p>Handle and store under inert gas.</p> |  |

Section I. Chemical Product and Company Identification

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| Chemical Name | Triethoxysilane | | |
| Catalog Number | T1040 | Supplier | TCI America 9211 N. Harborsgate St. Portland OR 1-800-423-8616 |
| Synonym | Not available. | | |
| Chemical Formula | C ₆ H ₁₆ O ₃ Si | | |
| CAS Number | 998-30-1 | In case of Emergency Call | Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International) |

Section II. Composition and Information on Ingredients

| Chemical Name | CAS Number | Percent (%) | TLV/PEL | Toxicology Data |
|-----------------|------------|----------------|----------------|--|
| Triethoxysilane | 998-30-1 | Min. 97.0 (GC) | Not available. | Rat LC ₅₀ (inhalation) 500 mg/m ³ /2H Mouse LC ₅₀ (inhalation) 500 mg/m ³ /2H Mouse LD ₅₀ (intravenous) 180 mg/kg |

Section III. Hazards Identification

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| Acute Health Effects | <p>Severe eye injury and blindness have been reported for humans.</p> <p>Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested.</p> <p>Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p> |
| Chronic Health Effects | <p>CARCINOGENIC EFFECTS : Not available.</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : Not available.</p> <p>DEVELOPMENTAL TOXICITY: Not available.</p> <p>Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p> |

Section IV. First Aid Measures

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| Eye Contact | Causes immediate or delayed severe eye irritation and possible blindness. Even mild exposures can cause conjunctivitis and corneal scarring. Initial symptoms of exposure may include a "scratchy" feeling in the eyes. Triethoxysilane causes severe eye injuries, as well as necrosis of corneal cells, which can progress after exposure has ceased. These destructive effects resist treatment and permanent blindness is possible from exposure. |
| Skin Contact | In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately. |
| Inhalation | If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve. |
| Ingestion | DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. |

Section V. Fire and Explosion Data

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| Flammability | Flammable. | Auto-Ignition | Not available. |
| Flash Points | 29 °C (84.2 °F). | Flammable Limits | LOWER: 1.2% |
| Combustion Products | These products are toxic carbon oxides (CO, CO ₂), silicates. | | |
| Fire Hazards | Unusual Fire and Explosion Hazards: Vapors of triethoxysilane cause corneal injury and blindness on even short exposures. | | |

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Emergency phone number (800) 424-9300

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| Explosion Hazards | Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. |
| Fire Fighting Media and Instructions | Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations. |


Section VI. Accidental Release Measures

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| Spill Cleanup Instructions | Toxic material. Flammable material. Corrosive material. Moisture sensitive material. Keep away from heat. Mechanical exhaust required. with adequate eye protection. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal. |
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Section VII. Handling and Storage

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| Handling and Storage Information | TOXIC. FLAMMABLE. CORROSIVE. MOISTURE SENSITIVE. Keep locked up. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/vapor/spray. Never add water to this product. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, acids, alkalis (bases). |
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Section VIII. Exposure Controls/Personal Protection

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| Engineering Controls | Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location. |
| Personal Protection | Eye and Face Protection: Chemical worker's goggles must be worn. Lab coat. Vapor respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.  |
| Exposure Limits | Not available. |

Section IX. Physical and Chemical Properties

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| Physical state @ 20°C | Liquid. (Clear, colorless ~ light yellow.) | Solubility | Not available. |
| Specific Gravity | 0.9 (water=1) | | |
| Molecular Weight | 164.27 | Partition Coefficient | Not available. |
| Boiling Point | 134°C (273.2°F) | Vapor Pressure | 27.00 hPa (@ 20°C) |
| Melting Point | -170°C (-274°F) | Vapor Density | 5.7 (Air = 1) |
| Refractive Index | Not available. | Volatility | Not available. |
| Critical Temperature | Not available. | Odor | Not available. |
| Viscosity | Not available. | Taste | Not available. |

Section X. Stability and Reactivity Data

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| Stability | This material is stable if stored under proper conditions. (See Section VII for instructions) |
| Conditions of Instability | Avoid excessive heat and light. Moisture sensitive. |
| Incompatibilities | Reactive with strong oxidizing agents, strong acids, strong alkalis (bases). |

Section XI. Toxicological Information

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| RTECS Number | VV6682000 |
| Routes of Exposure | Eye Contact. Ingestion. Inhalation. Skin contact. |
| Toxicity Data | Rat LC ₅₀ (inhalation) 500 mg/m ³ /2H Mouse LC ₅₀ (inhalation) 500 mg/m ³ /2H Mouse LD ₅₀ (intravenous) 180 mg/kg |
| Chronic Toxic Effects | CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY : Not available. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. |

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| Acute Toxic Effects | Severe eye injury and blindness have been reported for humans. Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |
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Section XII. Ecological Information

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| Ecotoxicity | Not available. |
| Environmental Fate | Not available. |

Section XIII. Disposal Considerations

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| Waste Disposal | Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance. |
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Section XIV. Transport Information

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| DOT Classification | DOT Class 6.1: Toxic material DOT Class 3: Flammable liquid |
| PIN Number | UN2929 |
| Proper Shipping Name | Toxic liquid, flammable, organic, n.o.s. |
| Packing Group (PG) | II |
| DOT Pictograms |   |

Section XV. Other Regulatory Information and Pictograms

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| TSCA Chemical Inventory (EPA) | This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list. |
| WHMIS Classification (Canada) | CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS E: Corrosive liquid. On NDSL |
| EINECS Number (EEC) | 213-650-7 |
| EEC Risk Statements | R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R34- Causes burns. R41- Risk of serious damage to eyes. |
| Japanese Regulatory Data | ENCS No. 2-2048 |

Section XVI. Other Information

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Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.