

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: **HEXACHLORODISILANE**

PRODUCT NO: 1962-UHP, 1962-EG

CAS NO: 13465-77-5

SYNONYMS: HCDS, Silane Hexachloride, Disilicon Hexachloride, Disilane Hexachloro

CHEMICAL FAMILY: CHLOROSILANE

Intended Use: Precursor for semiconductor industry

MANUFACTURER:

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IN CASE OF TRANSPORTATION EMERGENCY CONTACT CHEM-TREC 1-800-424-9300
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SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

GHS CLASSIFICATION:

Skin corrosion/irritation (category 1)

Flammable liquids (category 4)

Acute toxicity, inhalation (category 5)

Pictogram



Signal Word **Danger**

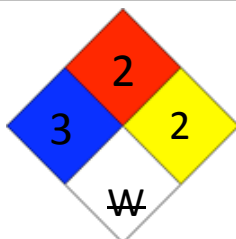
SECTION 2 HAZARDS IDENTIFICATION (Cont.)

Hazard Statement(s)

H227	Combustible liquid
H314	Causes severe skin burns and eye damage
H319	Causes serious eye irritation
H333	May be harmful if inhaled

Precautionary Statement(s)

P210	Keep away from heat/sparks/open flames/hot surfaces. – No smoking
P231	Handle under inert gas
P232	Protect from moisture.
P260	Do not breathe dust/fume/gas/mist/vapors/spray
P280	Wear protective gloves/protective clothing/eye protection/face protection
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/physician
P362	Take off immediately all contaminated clothing.
P363	Wash contaminated clothing before reuse.
P404	Store in a closed container.
P406	Store in corrosive resistant container with a resistant inner liner.



NFPA Rating

HEALTH: 3

FLAMMABILITY: 2

REACTIVITY: 2

SPECIAL: WATER REACTIVE

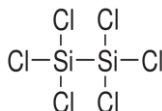
OTHER HAZARDS:

CORROSIVE CAUSES BURNS WATER /MOISTURE REACTIVE

Harmful by Inhalation, In contact with skin and eyes, if swallowed. Reacts with water to produce corrosive Hydrogen chloride fumes possibly highly flammable reaction.

SECTION 3 INGREDIENTS

Formula: Si₂Cl₆



Mol Wt: 268.89 g/mol

Synonyms: HCDS, Silane Hexachloride, Disilicon Hexachloride, Disilane Hexachloro

COMPOSITION / INFORMATION ON

CHEMICAL NAME	CAS#	ACGIH	OSHA	NIOSH
HEXACHLORODISILANE	13465-77-5	NOT LISTED	NOT LISTED	NOT LISTED

SECTION 4 FIRST AID MEASURES

EYE EXPOSURE: Immediately flush the eyes with copious amounts of cool water for at least 15 minutes. Assure flushing under eyelids. A victim may need assistance in keeping their eyelids open Remove contacts if easily possible. Get immediate, professional care from qualified physician or emergency care facility.

SKIN EXPOSURE: Wash affected area with copious amounts of cool water for at least 15 minutes. Remove contaminated clothes and shoes. Seek medical assistance immediately.

INHALATION: Remove victim to fresh air. Closely monitor the victim for signs of respiratory problems, such as difficulty in breathing, coughing, wheezing, or pain. If not breathing, administer CPR. If having trouble breathing, give oxygen if available. Seek immediate emergency medical assistance.

INGESTION: Do not induce vomiting. Rinse out mouth with water provided person is conscious. Seek immediate medical assistance.

NOTE: Material can form a siloxane polymer on skin, eyes, or in the lungs.

NOTE: Rinsing exposed areas with water at elevated temperatures will increase health affects

SECTION 5 FIREFIGHTING MEASURES

EXTINGUISHING MEDIUM:

Suitable: Alcohol resistant foam, Carbon dioxide, dry chemical.

Unsuitable: DO NOT USE WATER!

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Silicon oxides, carbon oxides, hydrogen chloride gas.

SPECIFIC HAZARDS: Reaction products of hexachlorodisilane with water could be highly flammable and will also release Hydrogen chloride gas. Sealed containers may rupture when heated. Contact with strong oxidizers may cause fires.

DANGER! Fires impinging (direct flame) on the outside surface of cylinders of this product can be very dangerous. Direct flame exposure on the cylinder wall can cause an explosion resulting in severe equipment damage and personnel injury over a large area surrounding the cylinder. If allowable withdraw from area and allow fire to bum.

ADVICE FOR FIRE FIGHTERS: If this product is involved in a fire, fire fighters should be equipped with a NIOSH approved positive pressure self-contained breathing apparatus and full protective clothing.

SECTION 6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas.

ENVIRONMENTAL PRECAUTIONS: Prevent further leakage or spillage if safe to do so. Do not allow material to enter drains.

METHODS AND MATERIALS: Wear chemical resistant/ fire-retardant gloves. Chemical resistant/flammable resistant suit and boots, and self-contained breathing apparatus if oxygen levels are below 19.5% or unknown. Eliminate all sources of ignition before spill cleanup begins. Cover spill with dry lime, soda ash, or sand. Use non-sparking tools. Ventilate area. Place spill residue in a suitable airtight container. Spill residue is water reactive should be placed in tightly sealed metal containers under inert atmosphere for disposal.

SECTION 7 HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Use with adequate ventilation. Avoid prolonged or repeated exposure. Handle and use in a controlled environment under inert atmosphere. Violent reaction may occur if exposed to moisture in air, or water. Causes severe burns. Do not breathe vapor/fumes. Do not get in eyes, on skin, on clothing, or shoes.

CONDITIONS FOR SAFE STORAGE: Keep in a tightly sealed container (corrosion resistant) under inert atmosphere. Store in a cool, dry, well-ventilated area.

INCOMPATIBILITIES: Keep away from water, moisture, humidity in atmosphere, alcohols, acids, oxidizers, Lewis bases, (ethers, amines, etc.)

SEE EXPLOSION DATA (ATTACHED PAGE 6)

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

Contains no substances with occupational exposure limit values.

APPROPRIATE ENGINEERING CONTROLS

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday. Install local exhaust ventilation devices and management to ensure proper control.

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION (Cont.)

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION: Approved safety glasses w/side shields, or safety goggles and face shield.

SKIN PROTECTION: Wear appropriate chemical resistant gloves, rubber, or neoprene.

VENTILATION: Chemical fume hood. Handle and use under inert atmosphere.

RESPIRATOR: If adequate ventilation is not available, a respirator should be worn. The use of respirators requires a Respirator Protection Program to be in compliance with 29CFR 1910.34 or NIOSH/MSHA or European Standard EN 149 approved respirator.

ADDITIONAL PROTECTION: DANGER! CORROSIVE! Causes burns. Water/moisture reactive. Avoid contact with skin, eyes, and clothing. Do not inhale vapors. Use with adequate ventilation. Use in a controlled environment. Avoid contact with WATER, MOISTURE, oxidizing agents, alcohols, acids, friction, heat, flames and sparks. Eyewash and safety shower in area capable of sustained flushing. Do not eat, drink, or smoke in area.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

COLOR AND FORM: Colorless liquid; acrid odor of hydrogen chloride

MOLECULAR WEIGHT: 268.89 g/mol

ODOR: No data available

ODOR THRESHOLD: No data available

pH: No data available

MELTING POINT/FREEZING POINT: -1° C

BOILING POINT: 144-145° C

FLASH POINT: 78° C

EVAPORATION RATE: No data available

UPPER/LOWER FLAMMABILITY/EXPLOSION LIMITS: No data available

VAPOR PRESSURE: 100 torr @ 85° C.

VAPOR DENSITY: No data available

SPECIFIC GRAVITY: 1.58 g/cm³@ 0° C.

SOLUBILITY IN WATER: Violent reaction, decomposes

PARTITION COEFFICIENT: N-OCTANOL/WATER: no data available

AUTO-IGNITION TEMPERATURE: no data available

DECOMPOSITION POINT: > 250° C.

VISCOSITY: No data available

ENTHALPY OF VAPORIZATION: 11.1 kcal/mole

SECTION 10 STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable if stored in sealed corrosion resistant containers under dry inert atmosphere. Explosion risk if stored more than 1 year.

HAZARDOUS POLYMERIZATION: Has not been reported.

CONDITIONS TO AVOID: Moist, humid conditions, heat, friction, flames, sparks.

INCOMPATIBILITY: Water, moisture, alcohols, acids, oxidizers, Lewis Bases (ethers, amines, etc.)

HAZARDOUS DECOMPOSITION PRODUCTS: Silicon oxides, hydrogen chloride gas.

SECTION 11 TOXICOLOGICAL DATA

ACUTE TOXICITY: No data available.

SKIN CORROSIVE/IRRITANT: May cause irritation or dermatitis.

SERIOUS EYE DAMAGE/IRRITATION: May cause severe eye irritation.

RESPIRATORY OR SKIN SENSITIZATION: No data available

GERM CELL MUTAGENICITY: No data available

CARCINOGENICITY:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 11 TOXICOLOGICAL DATA (Cont.)

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

REPRODUCTIVE TOXICITY: No data available

STOT-Single Exposure: No data available

STOT-Repeated Exposure: No data available

ASPIRATION HAZARD: No data available

POTENTIAL HEALTH EFFECTS:

Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion: May be harmful if swallowed.

Skin: May be harmful if absorbed through skin. Causes skin burns.

Eyes: Causes eye burns.

Signs and Symptoms of Exposure: Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Cough, shortness of breath, nausea, and headache.

NOTE: Rinsing exposed areas with water at elevated temperatures will increase health effects

PRIMARY ROUTES OF EXPOSURE: Inhalation, Ingestion, Skin and eye contact.

EYE CONTACT: Strong corrosive and irritating effect. Causes burns; can cause conjunctivitis, damage.

SKIN CONTACT: Corrosive effect on skin. Causes burns, cyanosis, or pale color.

INHALATION: Corrosive and destructive to mucous membranes and respiratory tract.

INGESTION: Corrosive effect, burns, perforation of digestive tract. May cause systemic effects.

SUBACUTE TO CHRONIC TOXICITY: Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Inhalation may result in spasm, inflammation, and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. May cause corneal damage, conjunctivitis.

SECTION 12 ECOLOGICAL DATA

TOXICITY: No data available

PERSISTENCE AND DEGRADABILITY: No data available

BIOACCUMULATIVE POTENTIAL: No data available

MOBILITY IN SOIL: No data available

OTHER ADVERSE EFFECTS: May be hazardous to aquatic life. Do not allow product to reach ground water, water course, or sewage system. Do not allow product to be released to the environment without proper governmental permits

SECTION 13 DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose of in accordance with all local state and federal waste disposal regulations. Do not allow down sewer or drains.

SECTION 14 TRANSPORTATION DATA

Chlorosilanes, corrosive, n.o.s. (Hexachlorodisilane)

Class 8

UN2987

PG II

CORROSIVE LABEL

CARGO ONLY AIRCRAFT

DOT, IATA, IMDG Regulated

Not classified as a Marine Pollutant

SECTION 15 REGULATORY INFORMATION

TSCA: Not Listed

OSHA HAZARDS: Corrosive

SARA (TITLE 313): This material does not contain any chemical components with known CAS numbers that exceed the Threshold reporting levels established by SARA Title III, Section 313.

SARA Section 302: None of the components in this material have a TPQ.

SARA 311/312: Acute Health Hazard

RCRA: None listed

CERCLA: None of the chemicals in this material have an RQ.

OSHA: None of the chemicals in this product are considered highly hazardous by OSHA. Clean Air Act:
This material does not contain any Class 1 or Class 2 ozone depleters.

CLEAN WATER ACT: Not listed as Toxic Pollutant or Priority Pollutants under CWA.

PENNSYLVANIA RIGHT TO KNOW COMPONENTS: Hexachlorodisilane

NEW JERSEY RIGHT TO KNOW COMPONENTS: Hexachlorodisilane

CALIFORNIA PROP. 65 COMPONENTS: This product does not contain chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16 OTHER INFORMATION

DISCLAIMER: The information herein is believed to be accurate and reliable as of the date compiled. However, Wonik Materials North America makes no representation, warranty, or guarantee of any kind with respect to the information in this document or any use of the product based on the information.

DATE PREPARED: 06/2018

SDS DEPT

EXPLOSION DATA

Long term storage of more than 1 year several incidents of shock sensitive detonations have been reported. In all cases material was stored greater than 1 year and evidence of package seal deterioration and partial hydrolysis was observed.

POSSIBLE EXPLANATION: Formation of hydridosilanes by HCl addition to the silane or peroxide formation. Polymeric hydrolysates or gels frequently are associated with shock sensitive behavior. Hexachlorodisilane is hydrolyzed by moisture in the air, forming insoluble "silicooxalic acid", (H₂Si₂O₄)_x which upon drying can be shock and friction sensitive.

RECOMMENDED STORAGE: Under dry, inert atmosphere in corrosion resistant containers. Material should be stored for no longer than 1 year.