

MATERIAL SAFETY DATA SHEET

IN CASE OF EMERGENCY CONTACT CHEM-TREC 1-703-741-5500

SECTION 1 PRODUCT AND COMPANY INFORMATION

MANUFACTURER:

WONIK MATERIALS NORTH AMERICA
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PRODUCT NAME: OCTACHLOROTRISILANE (OCTS)

PRODUCT NO: 2790-TG TECHNICAL GRADE

CAS#: 13596-23-1

FORMULA: Si_3Cl_8

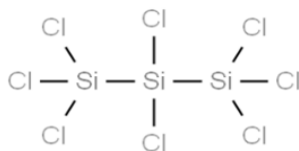
CHEMICAL FAMILY: CHLOROSILANE

SYNONYMS: PERCHLOROTRISILANE, TRISILANE OCTACHLORO, TRISILICON OCTACHLORO

EINECS #: 237-041-0

SECTION 2 COMPOSITION AND INFORMATION ON INGREDIENTS

Formula: Si_3Cl_8



EXPOSURE LIMITS IN AIR

CHEMICAL NAME	CAS#	ACGIH	OSHA	NIOSH
OCTACHLOROTRISILANE	13596-23-1	NOT LISTED	NOT LISTED	NOT LISTED

SECTION 3

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: DANGER! CORROSIVE CAUSES BURNS WATER /MOISTURE REACTIVE

Harmful by Inhalation, In contact with skin and eyes, if swallowed.

Reacts with water to produce corrosive HCl fumes possibly highly flammable reaction.

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

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

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

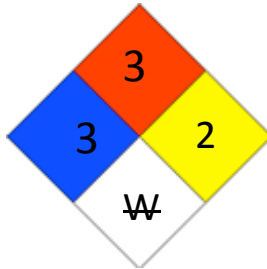
INHALATION: Corrosive and destructive to mucous membranes and respiratory tract.

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.

NFPA

FLAMMABILITY: 3 REACTIVITY: 3 INSTABILITY: 2 SPECIAL: WATER REACTIVE



SECTION 4 FIRST AID MEASURES

EYE EXPOSURE: Immediately flush the eyes with copious amounts of 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 water for at least 15 minutes. Remove contaminated clothes and shoes if necessary. 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.

SECTION 5 FIREFIGHTING MEASURES

FLASH POINT: NA

EXPLOSION LIMITS: No specific data found.

EXTINGUISHING 'MEDIUM: Alcohol resistant foam, CO₂, dry chemical, high expansion foam is recommended to cover flames. DO NOT USE WATER!

SPECIAL FIRE FIGHTING PROCEDURES: 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 5 FIREFIGHTING MEASURES (CONT'D)

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

UNUSUAL FIRE OR EXPLOSION HAZARDS: Reaction products of octachlorotrisilane with water could be highly flammable and will also release HCl. 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 burn.

SECTION 6 ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES: Evacuate personnel to safe area. 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.

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

SECTION 7 HANDLING AND STORAGE

HANDLING AND STORAGE: CORROSIVE MOISTURE AND WATER REACTIVE AIR SENSITIVE

Keep in a tightly sealed container (corrosion resistant) under inert atmosphere. Store in a cool, dry, well-ventilated area. Keep away from water, moisture, humidity in atmosphere, alcohols, acids, oxidizers, Lewis bases, (ethers, amines, etc.) Causes severe burns. Do not breathe vapor/fumes. Do not in eyes, on skin, on clothing, shoes.

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, water.

SEE EXPLOSION DATA (ATTACHED PAGE 4)

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

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

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

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

RESPIRATOR: If adequate ventilation if 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, clothing, shoes. 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. Use adequate protection to avoid contact with skin, clothing, shoes. (Apron, lab coat, arm sleevelets). 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: 367.88

MELTING POINT (DEG. C.): -67

DENSITY: 1.61 g/mL at 25 deg. C

BOILING POINT: 213-215 deg. C.

VAPOR PRESSURE 1 torr @ 48° C

ENTHALPY OF VAPORIZATION: 9kcal/mol

DECOMPOSITION POINT: No Data

SOLUBILITY IN WATER: Violent Reaction, decomposes

SECTION 10 STABILITY AND REACTIVITY

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.)

DECOMPOSITION PRODUCTS: Carbon oxides, silicon oxides, hydrogen chloride gas.

SECTION 11 TOXICOLOGICAL DATA

CARCINOGENIC EFFECTS:

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.

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.

TETRAGENICITY: No Data Found

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, headache.

SECTION 12 ECOLOGICAL DATA

ECOLOGICAL INFORMATION: 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 according to local state and federal regulations.

SECTION 14 TRANSPORTATION DATA

Chlorosilanes, corrosive, n.o.s.

Class 8

UN2987

PG II

CORROSIVE LABEL

CARGO ONLY AIRCRAFT

(AIR TRANSPORTATION)

DOT, IATA IMDG Regulated

Not classified as a Marine Pollutant

SECTION 15 REGULATORY INFORMATION

TSCA: 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.

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: 11/2012

MSDS DEPT

SECTION 16 OTHER INFORMATION (CONT'D)

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 hydrosilanes 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", $(\text{H}_2\text{Si}_2\text{O}_4)_x$ 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.