1. Identification

1.1. Product identifier

Trade name	Dynasylan® CPTEO
Chemical Name	(3-chloropropyl)triethoxysilane
CAS-No.	5089-70-3

1.2. Recommended use of the chemical and restrictions on use

Relevant applications identified	For industrial use
Function	Surface modifier Raw material

1.3. Details of the supplier of the safety data sheet

Company	Evonik Corporation USA 299 Jefferson Road Parsippany,NJ 07054-0677 USA
Telephone	973-929-8000
Telefax	973-929-8040
E-mail address	Product-Regulatory-Services@Evonik.com

1.4. 24 HOUR EMERGENCY TELEPHONE NUMBERS:

CHEMTREC - US & CANADA:	800-424-9300
CHEMTREC MEXICO:	01-800-681-9531
CHEMTREC INTERNATIONAL:	+1 703-527-3887 **(collect calls accepted)**
Product Regulatory Services :	973-929-8060

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation 29CFR 1910.1200

Flammable liquids	Category 4	H227
Acute aquatic toxicity	Category 3	H402

2.2. Label elements

Statutory basis: Classification according to Regulation 29CFR 1910.1200

Signal word	Warning
Hazard statement	H227 - Combustible liquid. H402 - Harmful to aquatic life.
Precautionary statement: Prevention	P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking. P273 - Avoid release to the environment. P280 - Wear protective gloves/ eye protection/ face protection.
Precautionary statement: Reaction	P370 + P378 - In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.
Precautionary statement: Storage	P403 + P235 - Store in a well-ventilated place. Keep cool.
Precautionary statement: Disposal	P501 - Dispose of contents/ container to an approved waste disposal plant.

2.3. Other hazards
None known

3. Composition/information on ingredients

• **(3-chloropropyl)triethoxysilane**	>= 97%
CAS-No. 5089-70-3	
Flammable liquids	Category 4
Acute aquatic toxicity	Category 3

4. First aid measures

4.1. Description of first aid measures

General advice
Remove contaminated or saturated clothing.

Inhalation
If aerosol or mists are formed:
Possible discomfort: cough, sneezing, flow of tears . Take affected persons out into the fresh air.

Skin contact
Wash off with soap and plenty of water.
If skin irritation persists, call a physician.

Eye contact
Rinse thoroughly with plenty of water keeping eyelid open.
In case of persistent discomfort: Consult an ophthalmologist.

Ingestion
Have the mouth rinsed with water.
Have patient drink plenty of water in small sips.
After absorbing large amounts of substance / In case of discomfort: Supply with medical care.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms
None known

Hazards
None known

4.3. Indication of any immediate medical attention and special treatment needed
If required, therapy of irritative symptoms.
After absorbing large amounts of substance:
administration of activated charcoal.
Acceleration of gastrointestinal passage

5. Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media: Water spray jet, Foam, Carbon dioxide (CO2), Dry powder
Unsuitable extinguishing media: High volume water jet

5.2. Special hazards arising from the substance or mixture
Hazardous fumes in fires, specific to the product:
hydrogen chloride
Carbon monoxide
Carbon dioxide (CO2)

5.3. Advice for firefighters
Water used to extinguish fire should not enter drainage systems, soil or stretches of water.
Ensure there are sufficient retaining facilities for water used to extinguish fire.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Do not inhale vapours / aerosols.

6.2. Environmental precautions
Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

6.3. Methods and material for containment and cleaning up
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

7. Handling and storage

7.1. Precautions for safe handling
Use with adequate ventilation.

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion
Keep away from sources of ignition - No smoking.
Keep away from humidity.
Take precautionary measures against static discharges.
Explosion protection is recommended in case the explosion limits for the following substance might be exceeded: Ethanol.

Danger of explosion from residual product fumes; therefore avoid spark production through cutting, grinding, or welding work in the area of the container.
When repairs of the production system are to be made (e.g. welding work), the section to be repaired must be essentially free of product.

Storage
Keep containers tightly closed in a cool, well-ventilated place. Protect from moisture.
Residual vapors might explode on ignition; do not apply heat, cut, drill, grind or weld on or near this container.

8. Exposure controls/personal protection

8.1. Control parameters

DNEL/DMEL values

Remarks not necessary (see chapter 15)

PNEC values

Remarks not necessary (see chapter 15)

8.2. Exposure controls

Engineering measures
Ensure good ventilation during processing.

Personal protective equipment

Respiratory protection
A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Hand protection
Use impermeable gloves.

Eye protection
Use chemical splash goggles or face shield.

Skin and body protection
A safety shower and eye wash fountain should be readily available.
To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

Hygiene measures
Avoid contact with skin, eyes and clothing. Do not inhale vapors or aerosols. Do not eat, drink, or smoke when using the product. Remove contaminated or saturated clothing.

Protective measures
Handle in accordance with good industrial hygiene and safety practice.
If workplace exposure limits are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used.
If there is the possibility of skin/eye contact, the indicated hand/eye/body protection should be used.
Do not breathe in vapours or aerosols.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

physical state liquid (20 °C) (1013 hPa)

Colour	colorless	
Form	clear liquid	
Odour	fruity	
pH	Not determined.	
Melting point/range	< -70 °C	
Boiling point/range	215 °C	(1013 hPa)
	Method:	DIN 51 751
Flash point	86 °C	
	Method:	DIN EN ISO 2719 (Pensky-Martens, Closed Cup)
Flammability (solid, gas)	not determined	
Lower explosion limit	0.5 %(V)	(150 °C)
Upper explosion limit	not determined	
Vapour pressure	<= 100 Pa	(20 °C)
Density	1.004 g/cm3	(20 °C)
	Method:	DIN 51757
Water solubility	ca. 113 g/l	(20 °C)
	Method:	OECD Test Guideline 105
	Not miscible. Decomposition by hydrolysis.	
Partition coefficient: n-octanol/water	log Pow:	3.13 (21 °C)
	Method:	OECD TG 107
Autoignition temperature	Not determined.	
Viscosity, dynamic	1.4 mPa.s	(25 °C)
	Method:	DIN 53 015

9.2. Other information

Explosiveness: not explosive

10. Stability and reactivity

10.1. Reactivity

No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions: No dangerous reactions known.

10.4. Conditions to avoid
In the presence of oxygen and heat, the ethanol forming during the reaction may produce acetaldehyde.
Material may form acetaldehyde when heated with inorganic pigments in the presence of air.

10.5. Incompatible materials
Avoid contact with air humidity and acid., Formation of ethanol.

10.6. Hazardous decomposition products
Ethanol in case of hydrolysis, Alcohol formed by hydrolysis lowers the flash point of the product.

11. Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity	LD50 Rat: > 2000 mg/kg Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	No data available
Acute dermal toxicity	LD50 Rat: > 2000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity (limit test)
Skin irritation	Rabbit No skin irritation Method: OECD Test Guideline 404
Eye irritation	Rabbit No eye irritation Method: OECD Test Guideline 405
Sensitization	Buehler Test Guinea pig: Does not cause skin sensitisation. Method: OECD Test Guideline 406
Repeated dose toxicity	Species: Rat Application Route: inhalative Test atmosphere: vapour Exposure duration: 90-day Frequency of exposure: 5 days/weeks, 6 hours/day NOAEC: 813 mg/m³ Method: OECD TG 413
Assessment of STOT single exposure	Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.
Assessment of STOT repeat exposure	Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Risk of aspiration toxicity	No evidence of aspiration toxicity

Gentoxicity in vitro	Ames test Salmonella typhimurium negative Method: OECD TG 471 gene mutation TK +/- mouse lymphoma cell (L5178Y) negative Method: OECD TG 476 Cytogenetic Test (chromosome aberration) Human lymphocytes negative Method: OECD TG 473
Carcinogenicity	No evidence that cancer may be caused.
carcinogenicity assessment	Contains no carcinogenic substances as defined by NTP, IARC and/or OSHA.
Toxicity to reproduction	no effects

12. Ecological information

12.1. Toxicity

Toxicity to fish	LC50 Danio rerio (zebra fish): 80 mg/l / 96 h Method: OECD TG 203
Toxicity in aquatic invertebrates	EC50 Daphnia magna (Water flea): 140 mg/l / 48 h Method: OECD 202 part 1
Toxicity to algae	EC50 Desmodesmus subspicatus (green algae): > 819 mg/l / 72 h Method: OECD TG 201 NOEC Desmodesmus subspicatus (green algae): 273 mg/l / 72 h Method: OECD TG 201
Toxicity to bacteria	EC 10 Pseudomonas putida: > 1800 mg/l / 5 h Method: Bringmann und Kühn, Z. Wasser Abwasser Forsch. 10, 87-98 (1977) tested in the presence of emulsifiers
chronic toxicity in fish	NOEC Danio rerio (zebra fish): 58 mg/l / 96 d
chronic toxicity in daphnia	NOEC Daphnia magna (Water flea): >= 100 mg/l / 21 d Method: OECD 202 part 2

12.2. Persistence and degradability

Biodegradability	Exposure time: 28 d Result: 46 % Not readily biodegradable. Method: OECD TG 301 B

12.3. Bioaccumulative potential

Bioaccumulation	low

12.4. Mobility in soil

Mobility	low

12.5. Other adverse effects

Further Information	The data we have at our disposal do not necessitate identification concerning environmental hazard.

13. Disposal considerations

13.1. Waste treatment methods

Product

Waste must be disposed of in accordance with federal, state and local regulations. Incineration is the preferred method. Empty containers must be handled with care due to product residue. DO NOT HEAT OR CUT THE EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH.

Uncleaned packaging

Incorrect disposal or reuse of this container is illegal and can be dangerous.

Other countries: observe the national regulations.

14. Transport information

Not dangerous according to transport regulations.

14.1.	UN number:	--
14.2.	UN proper shipping name:	--
14.3.	Transport hazard class(es):	--
14.4.	Packing group:	--
14.5.	Environmental hazards (Marine pollutant):	--
14.6.	Special precautions for user:	Yes

For USA only: Not considered combustible liquid because the substance does not sustain combustion.

15. Regulatory information

US Federal Regulations

OSHA

If listed below, chemical specific standards apply to the product or components:

- None listed

Clean Air Act Section (112)

If listed below, components present at or above the de minimus level are hazardous air pollutants:

- None listed

CERCLA Reportable Quantities

If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

- None listed

SARA Title III Section 311/312 Hazard Categories

The product meets the criteria only for the listed hazard classes:

- Fire Hazard

SARA Title III Section 313 Reportable Substances

If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

- None listed

Toxic Substances Control Act (TSCA)

If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

- None listed

State Regulations

The Listing requirements of the Right to Know (RTK) legislation varies by state. All information for NJ, PA, MA and other states can be derived from the listing of hazardous and non-hazardous components in section 2 and 15 of this MSDS.

California Proposition 65

A warning under the California Drinking Water Act is required only if listed below:

- None listed

An employer using HMIS/NFPA labeling must through training ensure that its employees are fully aware of the hazards of the chemicals used.

HMIS Ratings

Health :	1
Flammability :	2
Physical Hazard :	1

NFPA Ratings

Health :	1
Flammability :	2
Reactivity :	1

16. Other information

Further information

Revision date 07/07/2017

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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Legend

ACC	American Chemistry Council
ACGIH	American Conference of Governmental Industrial Hygenists
ACS	Advisory Committee on Sustainability
ADI	Acceptable Daily Intake
ASTM	American Society for Testing and Materials
ATP	Adaptation to Technical Progress
BCF	Bioconcentration factor
BOD	Biochemical oxygen demand
c.c.	closed cup
CAO	Cargo Aircraft Only
Carc	Carcinogen
CAS	Chemical Abstract Services
CDN	Canada
CEPA	Canadian Environmental Protection Act
CERCLA	Comprehensive Environmental Response – Compensation and Liability Act
CFR	Code of Federal Regulations
CMR	carcinogenic-mutagenic-toxic for reproduction
COD	Chemical oxygen demand
DIN	German Institute for Standardization
DMEL	Derived minimum effect level
DNEL	Derived no effect level
DOT	Department of Transportation
EC50	half maximal effective concentration

EPA	Environmental Protection Agency
ErC50	Reduction of Growth Rate
ERG	Emergency Response Guide Book
FDA	Food and Drug Administration
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
GLP	Good Laboratory Practice
GMO	Genetic Modified Organism
HCS	Hazard Communication Standard
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
ICAO-TI	International Civil Aviation Organization- Technical Instructions
ICCA	International Council of Chemical Association
ID	Identification number
IMDG	International Maritime Dangerous Goods
IUPAC	International Union of Pure and Applied Chemistry
ISO	International Organization For Standardization
LC50	50 % Lethal Concentration
LD50	50 % Lethal Dose
L(E)C50	LC50 or EC50
LOAEL	Lowest observed adverse effect level
LOEL	Lowest observed effect level
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NOAEL	No observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
o. c.	open cup
OECD	Organisation for Economic Cooperation and Development
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PBT	Persistent, bioaccumulative, toxic
PEC	Predicted effect concentration
PNEC	Predicted no effect concentration
RQ	Reportable Quantity
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
UN	United Nations
vPvB	very persistent, very bioaccumulative
voc	volatile organic compounds
WHMIS	Workplace Hazardous Materials Information System
WHO	World Health Organization