SAFETY DATA SHEET

Classified in accordance 29 CFR 1910.1200

1. Identification

Product identifier: Dynasylan® VTMO
Chemical name:
Trimethoxyvinylsilane

Other means of identification
CAS Number: 2768-02-7

Recommended restrictions

Recommended use: For industrial use Coupling agent Cross-linking agents
Restrictions on use: Not determined.

Manufacturer/Importer/Distributor Information

Company Name	:	Evonik Corporation 2 Turner Place Piscataway, NJ 08854 USA
Telephone	:	+1 973 929 8000
Fax	:	+1 973 929 8040
E-mail	:	product-regulatory-services@evonik.com

Emergency telephone number:

24-Hour Health Emergency	:	+1 800 424 9300 (CHEMTREC - US & CANADA) 800 681 9531 (CHEMTREC MEXICO) +1 703 527 3887 (CHEMTREC WORLD)

2. Hazard(s) identification

Hazard Classification

Physical Hazards

Flammable liquids	Category 3

Health Hazards

Acute toxicity (Inhalation - vapor)	Category 4
Skin sensitizer	Category 1B

Label Elements

Hazard Symbol:

Signal Word: Warning

Hazard Statement:

Flammable liquid and vapor.
Harmful if inhaled.
May cause an allergic skin reaction.

Precautionary Statements

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.

Response: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention. Specific treatment (see supplemental first aid instructions on this label). IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage: Store in a well-ventilated place. Keep cool.

Disposal: Dispose of contents/ container to an approved facility in accordance with local, regional, national and international regulations.

Hazard(s) not otherwise classified (HNOC): None.

3. Composition/information on ingredients

Chemical name:
Trimethoxyvinylsilane

Substances

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
Trimethoxyvinylsilane		2768-02-7	>98%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

The exact concentration has been withheld as a trade secret.

4. First-aid measures

Description of necessary first-aid measures

General information:	Remove contaminated or saturated clothing immediately and follow safe disposal procedures.
Inhalation:	If aerosol or mists are inhaled, take affected persons out into the fresh air.In case of persistent discomfort or other symptoms, consult a physician immediately.
Skin Contact:	Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Obtain medical attention immediately if symptoms occur. Wash clothing before reuse.
Eye contact:	In case of contact, immediately flush eyes with plenty of water, or if necessary, with eye rinsing solution. In case of persistent discomfort, consult an ophthalmologist.
Ingestion:	If substance is accidentally swallowed, do not induce vomiting. If fully conscious, have patient rinse mouth with plenty of water and drink plenty of water in small sips. If unconscious, ensure person is in a stable position. Never give anything by mouth to an unconscious person. Obtain immediate medical attention.
Personal Protection for First-aid Responders:	No data available.

Most important symptoms and effects, both acute and delayed

Symptoms:	If large amount of substance is absorbed, liberation of reaction product (methanol) can lead to symptoms of poisoning. Possible signs of poisoning include daze, dizziness, nausea, colicky abdominal pain or respiratory disturbance. Symptoms of increasing intoxication include dysopia or loss of eyesight. Treatment may include immediate gastric lavage, antidote treatment or correction of acid-base balance. Detection of the substance (methanol) is possible in blood. Evidence shows that the treatment of methanol absorption is enhanced through the administration of ethanol, which should be given to produce a blood level of at least 0.1%. Ethanol diminishes the production of toxic metabolites of methanol. Obtain treatment of allergic reaction if necessary.
Hazards:	No data available.

Indication of immediate medical attention and special treatment needed

Treatment:	No data available.

5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:	Water spray, foam, dry powder or carbon dioxide.
Unsuitable extinguishing media:	High volume water jet.
Special hazards arising from the substance or mixture:	Product is flammable. In case of fire cool endangered containers with water. Closed container may rupture if strongly heated.Flammable liquid. Vapors can travel to a source of ignition and flash back. Explosive mixtures may occur at temperatures at or above the flashpoint.

Special protective equipment and precautions for fire-fighters

Special fire-fighting procedures:	No data available.
Special protective equipment for fire-fighters:	As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:	Use personal protective equipment. Keep away from sources of ignition - No smoking. Ensure adequate ventilation.
Accidental release measures:	Remove sources of ignition and ventilate area. Run off may create fire or explosion hazard in sewer. Assure sufficient ventilation.
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). Suitable absorbents: sand (for damming up)
Environmental Precautions:	Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

7. Handling and storage

Handling

Technical measures (e.g. Local and general ventilation):	Provide good ventilation or extraction. In case of thermal processing, provide for extraction of the vapours or adequate ventilation.
Safe handling advice:	Assure sufficient ventilation. Application, processing: Provide good ventilation or extraction.For personal protection see section 8. Keep away from heat, sparks, flames and other sources of ignition. Keep container tightly closed. Use only with adequate ventilation. Vapors may spread long distances and travel to areas away from the work site before igniting or flashing back to the vapor source. Handle in accordance with good industrial hygiene and safety practice. Wear suitable protective equipment. Do not breathe in vapours or aerosols. If workplace exposure limits are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used. Avoid contact with eyes, skin, and clothing. If there is the possibility of skin/eye contact, the indicated hand/eye/body protection should be used.
Contact avoidance measures:	No data available.

Storage

Safe storage conditions:	Take precautionary measures against static discharges. Keep away from sources of ignition - No smoking. Explosion protection equipment required. 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.This material may have a low electrical conductivity and therefore may accumulate dangerous levels of static electricity. An ignitable vapor-air mixture can form inside storage tanks.

The user must be sure to dissipate static charge by careful bonding and grounding of all equipment and personnel involved in fluid transfer with continuity checks to prove effectiveness. Additional precautions against fire and explosion are the use of inert gas to purge vapor space; dip-pipes while filling vessels, especially lined vessels; grounded tank level floats; reduced flow velocity; self-closing valves on transfer lines and flame arrestors in vent lines.

Additional guidance on fire and explosion protection may be found in various consensus standards, including NFPA 30, 69 and 77 and API 2003 as well as OSHA regulation 29CFR1910.106.

Follow all SDS/label precautions even after container is emptied because it may retain product residues.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.

Safe packaging materials: No data available.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

None of the components have assigned exposure limits.

Biological Limit Values

No biological exposure limits noted for the ingredient(s).

Appropriate Engineering Controls Provide good ventilation or extraction. In case of thermal processing, provide for extraction of the vapours or adequate ventilation.

Individual protection measures, such as personal protective equipment

Eye/face protection: Wear safety glasses with side shields.

Skin Protection

Hand Protection:	Material: Butyl rubber. Break-through time: >= 480 min Material: Fluorinated rubber (Viton) Break-through time: >= 480 min Additional Information: The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use., Selection of protective gloves to meet the requirements of specific workplaces., The suitability for a specific workplace should be discussed with the producers of the protective gloves., Use impermeable gloves.
Skin and Body Protection:	When handling larger quantities: Flame retardant protective clothing Safety showers and eye showers should be easily accessible. In order to determine further specifications applicable to the personal protection equipment, a hazard assessment according to the OSHA standards (29 CFR 1910.132) for personal protection equipment (PPE) is recommended before the product is used.
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.
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.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical state:	liquid
Form:	liquid
Color:	Colorless
Odor:	Fruity
Odor Threshold:	No data available.
Freezing point:	-143 °F/-97 °C (literature)
Boiling Point:	253 °F/123 °C (1,013 hPa) (DIN 51751)
Flammability:	No data available.

Upper/lower limit on flammability or explosive limits

Explosive limit - upper:	23.94 %(V)
Explosive limit - lower:	1.4 %(V)
Flash Point:	77 °F/25 °C (DIN EN ISO 13736)
Self Ignition Temperature:	435 °F/224 °C

Decomposition Temperature:	> 253 °F/> 123 °C
pH:	No data available.
Viscosity	
Dynamic viscosity:	1 mPa.s (68 °F/20 °C, DIN 53015)
Kinematic viscosity:	No data available.
Flow Time:	No data available.
Solubility(ies)	
Solubility in Water:	not miscible decomposition by hydrolysis
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	1.1 (QSAR) -2.0 (QSAR) hydrolysis product
Vapor pressure:	88 hPa (122 °F/50 °C) (DNV 1300) 12 hPa (68 °F/20 °C) (DNV 1300)
Relative density:	No data available.
Density:	0.97 g/cm3 (68 °F/20 °C) (DIN 51757)
Bulk density:	No data available.
Relative vapor density:	No data available.

Other information

Explosive properties:	Not explosive
Minimum ignition temperature:	455 °F/235 °C (DIN 51794)
Peroxides:	Not applicable
Metal Corrosion:	Not to be expected in view of the structure

10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable under recommended storage conditions.
Possibility of hazardous reactions:	Reacts with: Peroxides. Decomposition (explosion-like) in the presence of alkalis at temperatures above about 123 °C.
Conditions to avoid:	Keep away from heat and sources of ignition. When heated, formation of explosive vapour/air mixtures.
Incompatible Materials:	Water. Alkalies. Peroxide
Hazardous Decomposition Products:	Methanol in case of hydrolysis. Alcohol formed by hydrolysis lowers the flash point of the product.

11. Toxicological information

Information on toxicological effects

Information on likely routes of exposure

Inhalation:	No data available.
Skin Contact:	No data available.
Eye contact:	No data available.

Ingestion: No data available.

Acute toxicity (list all possible routes of exposure)

Oral
Product: LD 50 (Rat, Female, Male): 7,120 mg/kg (OECD 401)

Dermal
Product: LD 50 (Rabbit, Female, Male): > 2,000 mg/kg (OECD 402) Not toxic after single exposure;

Inhalation
Product: LC 50 (Rat, 4 h): 16.8 mg/l Vapour

Repeated dose toxicity
Product: NOAEC (Rat(Female, Male), Inhalation - vapor, 14 d): 58 mg/m³

Skin Corrosion/Irritation
Product: Not irritating OECD 404 (Rabbit):

Serious Eye Damage/Eye Irritation
Product: Not irritating Rabbit:

Respiratory or Skin Sensitization
Product: Buehler Test, OECD 406 (Guinea Pig): Skin sensitizer

Carcinogenicity
Product: Contains no carcinogenic substances as defined by NTP, IARC and/or OSHA. No evidence that cancer may be caused.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogens present or none present in regulated quantities

ACGIH: US.ACGIH Threshold Limit Values:
No carcinogens present or none present in regulated quantities

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogens present or none present in regulated quantities

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:
No carcinogens present or none present in regulated quantities

Germ Cell Mutagenicity

no evidence of mutagenic effects

In vitro
Product: Ames test (OECD 471): negative;
gene mutation test (OECD 476): negative;
Chromosomal aberration (OECD 473): positive;

In vivo
Product: Micronucleus test (OECD 474) Intraperitoneal (Mouse, Female, Male): negative;

Reproductive toxicity
Product: Animal testing did not show any effects on fertility.

Specific Target Organ Toxicity - Single Exposure

Product: Not classified based on available information.

Specific Target Organ Toxicity - Repeated Exposure
Product: Not classified based on available information.

Aspiration Hazard
Product: No evidence of aspiration toxicity

Information on health hazards

Other hazards
Product: No data available.

12. Ecological information

Ecotoxicity:
Acute hazards to the aquatic environment:

Fish
Product: LC 50 (Oncorhynchus mykiss, 96 h): 191 mg/l

Aquatic Invertebrates
Product: EC 50 (Daphnia magna, 48 h): 168.7 mg/l

Toxicity to Aquatic Plants
Product: EC 50 (Algae (Pseudokirchneriella subcapitata), 7 d): 210 mg/l (US-EPA-method) growth rate

Toxicity to microorganisms
Product: EC 10 (Pseudomonas putida, 5 h): 1,000 mg/l (DIN EN ISO 10712) EC 50 (activated sludge, 3 h): > 100 mg/l (OECD 209)

Chronic hazards to the aquatic environment:

Fish
Product: No data available.

Aquatic Invertebrates
Product: NOEC (Daphnia magna, 21 d): 28.1 mg/l (OECD 211)
Lowest Observed Effect Concentration (Daphnia magna, 21 d): 52.4 mg/l (OECD 211)
EC 50 (Daphnia magna, 21 d): 119 mg/l (OECD 211)

Toxicity to Aquatic Plants
Product: NOEC (Algae (Pseudokirchneriella subcapitata), 7 d): 25 mg/l (US-EPA-method) growth rate

Toxicity to microorganisms
Product: EC 10 (Pseudomonas putida, 5 h): 1,000 mg/l (DIN EN ISO 10712) EC 50 (activated sludge, 3 h): > 100 mg/l (OECD 209)

Persistence and Degradability

Biodegradation
Product: 51 % (28 d, OECD 301 F) The product is not biodegradable., aerobic

BOD/COD Ratio
Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)
Product: not bioaccumulative

Partition Coefficient n-octanol / water (log Kow)
Product: Log Kow: 1.1 20 °C (QSAR)
Log Kow: -2.0 20 °C (QSAR) hydrolysis product

Mobility in soil:

Product Adsorption on the floor: low.

Results of PBT and vPvB assessment:

Product No data available.

Other adverse effects:

Other hazards
Product: The data we have at our disposal do not necessitate identification concerning environmental hazard.

13. Disposal considerations

Disposal methods: Waste must be disposed of in accordance with federal, provincial, state and local regulations. Empty containers must be handled with care due to product residue. DO NOT HEAT OR CUT THE EMPTY CONTAINER WITH AN ELECTRIC OR GAS TORCH.

Contaminated Packaging: Do not reuse empty containers and dispose of in accordance with the regulations issued by the appropriate local authorities. If there is product residue in the emptied container, follow directions for handling on the container's label. Incorrect disposal or reuse of this container is illegal and can be dangerous. Other countries: observe the national regulations.

14. Transport information

Domestic regulation

49 CFR

UN/ID/NA number	:	UN 1993
Proper shipping name	:	Flammable liquids, n.o.s. (trimethoxyvinylsilane)
Class	:	3
Packing group	:	III
Labels	:	3
ERG Code	:	128
Marine pollutant	:	no

International Regulations

IATA-DGR

UN/ID No.	:	UN 1993
Proper shipping name	:	Flammable liquid, n.o.s. (trimethoxyvinylsilane)
Class	:	3
Packing group	:	III

Labels	:	3
Packing instruction (cargo aircraft)	:	366
Packing instruction (passenger aircraft)	:	355
Remarks	:	ERG-Code 3L, Maximum Net Quantity per Package 220 L

IMDG-Code

UN number or ID number	:	UN 1993
Proper shipping name	:	FLAMMABLE LIQUID, N.O.S. (trimethoxyvinylsilane)
Class	:	3
Packing group	:	III
Labels	:	3
EmS Code	:	F-E, S-E
Marine pollutant	:	no
Remarks	:	"Away from" alkalis and peroxide.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended
None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):
Reportable Quantity not reasonably exceeded.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Flammable (gases, aerosols, liquids, or solids), Acute toxicity (any route of exposure), Respiratory or Skin Sensitization

US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances

None present or none present in regulated quantities.

US. EPCRA (SARA Title III Section 313 Toxic Chemical Release Inventory (TRI) Reporting

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)
None present or none present in regulated quantities.

US State Regulations

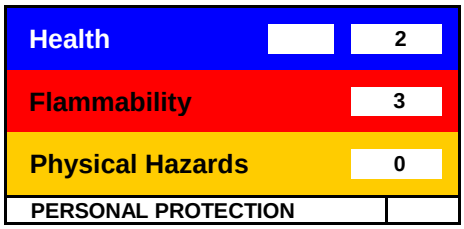
US. California Proposition 65

WARNING: This product can expose you to chemicals including, methanol which is [are] known to the State of California to cause birth defects or other reproductive harm.

For more information go to www.P65Warnings.ca.gov.

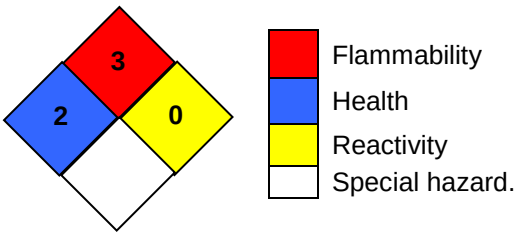
16.Other information, including date of preparation or last revision

HMIS Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; *Chronic health effect

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date: 04/08/2019

Version #: 2.1

Further Information: No data available.

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

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