

SAFETY DATA SHEET**Dynasylan® PTMO**

Material no.		Version	4.0 / US
Specification	120552	Revision date	05/07/2015
Order Number		Print Date	06/25/2015
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1. Identification**1.1. Product identifier**

Trade name	Dynasylan® PTMO
Chemical Name	Trimethoxypropylsilane
CAS-No.	1067-25-0

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
Email 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 3	H226
Skin irritation	Category 2	H315

2.2. Label elements

Statutory basis
Symbol(s)

Classification according to Regulation 29CFR 1910.1200



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Signal word	Warning
Hazard statement	H226 - Flammable liquid and vapour. H315 - Causes skin irritation.
Precautionary statement Prevention	P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P233 - Keep container tightly closed. P240 - Ground/bond container and receiving equipment. P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment. P242 - Use only non-sparking tools. P243 - Take precautionary measures against static discharge. P264 - Wash skin thoroughly after handling. P280 - Wear protective gloves/ eye protection/ face protection.
Precautionary statement Reaction	P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P332 + P313 - If skin irritation occurs: Get medical advice/ attention. P362 + P364 - Take off contaminated clothing and wash it before reuse. 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

• Trimethoxypropylsilane	<= 100%
CAS-No.	1067-25-0
Flammable liquids	Category 3
Skin irritation	Category 2

Other information

This material is classified as hazardous under OSHA regulations.

4. First aid measures

4.1. Description of first aid measures

General advice

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.

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Eye contact

Keeping eyelid open, immediately rinse thoroughly for at least 5 minutes using plenty of water or, if necessary, 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.

4.2. 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.

4.3. Indication of any immediate medical attention and special treatment needed

Treatment:

Immediate gastric lavage. Antidote treatment, correction of acid-base balance.

Detection of substance (Methanol) possible in:

Blood

Antidote treatment: ethanol.

5. Fire-fighting measures**5.1. Extinguishing media**

Suitable extinguishing media: Use water spray or fog, foam, dry chemical or CO₂.

Unsuitable extinguishing media: High volume water jet

5.2. Special hazards arising from the substance or mixture

Standard procedure for chemical fires.

Flammable liquid. Vapours may reach an ignition source and flash back. Explosive mixtures may form at temperatures at or above the flash point.

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. Keep away from sources of ignition - No smoking.

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

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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).

Additional advice

Remove sources of ignition and ventilate area.
Run off may create fire or explosion hazard in sewer.
Assure sufficient ventilation.

7. Handling and storage**7.1. Precautions for safe handling**

Keep away from heat. Keep away from sparks, flames and other sources of ignition. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use with adequate ventilation. Ground and bond containers when transferring material. Use explosion-proof equipment. Follow all MSDS/label precautions even after the container is emptied because it may retain product residues. Wash thoroughly after handling. Vapors may spread long distances and travel to areas away from the work site before igniting or flashing back to the vapor source.

Use non-sparking equipment when the level of vapors and/or mists can exceed the explosive limit, especially in areas with poor ventilation. Wear personal protective equipment; see section 8.

7.2. Conditions for safe storage, including any incompatibilities**Advice on protection against fire and explosion**

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 MSDS/label precautions even after container is emptied because it may retain product residues.

Storage

Keep containers tightly closed in a cool, well-ventilated place.
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**

• Tetramethyl orthosilicate		
CAS-No.	681-84-5	
Control parameters	1 ppm	Time Weighted Average (TWA):(ACGIH)
Control parameters	1 ppm 6 mg/m ³	Time Weighted Average (TWA) Permissible Exposure Limit (PEL):(US CA OEL)
Control parameters	1 ppm 6 mg/m ³	Time Weighted Average (TWA):(TN OEL)

8.2. Exposure controls

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Engineering measures

Use this product preferably in a closed system, or use process enclosures, local exhaust ventilation or other engineering controls to minimize airborne exposure.

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

Glove material	for example, butyl-rubber
Material thickness	0.5 mm
Break through time	>= 480 min
Glove material	for example, Fluorinated rubber (Viton)
Material thickness	0.4 mm
Break through time	>= 480 min

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. Suitability for specific workplaces should be clarified with protective glove manufacturers. 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 (29CFR 1910.132) 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.

9. Physical and chemical properties**9.1. Information on basic physical and chemical properties**

physical state	liquid (20 °C) (1013 hPa)	
Colour	colorless	
Form	liquid	
Odour	aromatic	
Odour Threshold	not determined	
pH	not determined	
Melting point/range	< -20 °C	
Boiling point/range	137 °C	(1013 hPa)
	Method:	DIN 51 751
Flash point	35 °C	
	Method:	DIN EN ISO 13736

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Evaporation rate	not determined
Flammability (solid, gas)	no data available
Lower explosion limit	not determined
Upper explosion limit	not determined
Vapour pressure	93 hPa (20 °C)
Vapour density	not determined
Density	0.94 g/cm ³ (20 °C) Method: DIN 51757
Water solubility	not miscible decomposition by hydrolysis
Partition coefficient: n-octanol/water	not determined
Autoignition temperature	245 °C Method: DIN 51 794
Thermal decomposition	not determined
Viscosity, dynamic	0.7 mPa.s (20 °C) Method: DIN 53 015

9.2. Other information

Explosiveness	not explosive
Other information	Vapors can form explosive mixtures with air.

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

Keep away from heat and sources of ignition.

10.5. Incompatible materials

Water

10.6. Hazardous decomposition products

Methanol in case of hydrolysis.

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11. Toxicological information**11.1. Information on toxicological effects**

Acute oral toxicity	LD50 Rat: > 5170 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	LC50 Rat: > 22.2 mg/l / 4 h / dust/mist Method: OECD Test Guideline 403
Acute dermal toxicity	No data available
Skin irritation	Rabbit 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	Oral Rat(male and female) Number of exposures: 7 days a week NOAEL: 60.5 mg/kg Method: OECD TG 422 Test substance: Structurally similar substance Molecular Weight corrected
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 aspiration toxicity classification
Gentoxicity in vitro	Ames test Salmonella typhimurium negative Method: OECD TG 471 gene mutation Chinese hamster (CHO K1 -cells) negative Method: OECD TG 476 Test substance: Structurally similar substance chromosomal aberration negative Method: OECD TG 473 Test substance: Structurally similar substance
Gentoxicity in vivo	Micronucleus test Mouse Oral negative

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Method: OECD TG 474
Test substance: Structurally similar substance

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: 1 generation Oral Rat
Number of exposures: daily
NOAEL (No Observed Adverse Effect Level) of parents: 750 mg/kg
NOAEL F1: 750 mg/kg
Method: OECD Test Guideline 415
Test substance: Structurally similar substance
Molecular Weight corrected

Prenatal development toxicity study Oral Rat
Number of exposures: daily
NOAEL (No Observed Adverse Effect Level) of parents: 750 mg/kg
NOAEL F1: 750 mg/kg
Method: OECD TG 414
Test substance: Structurally similar substance
Molecular Weight corrected

Screening for reproductive/developmental toxicity Oral Rat
Number of exposures: daily
NOAEL (No Observed Adverse Effect Level) of parents: 1210 mg/kg
NOAEL F1: 1210 mg/kg
Method: OECD TG 422
Test substance: Structurally similar substance
Molecular Weight corrected

12. Ecological information**12.1. Toxicity**

Toxicity to fish: LC50 Danio rerio (zebra fish): > 746 mg/l / 96 h
Method: OECD TG 203
In the range of water solubility not toxic under test conditions.

Toxicity in aquatic invertebrates: EC50 Daphnia magna (Water flea): > 816 mg/l / 48 h
Method: OECD TG 202

Toxicity to algae: EC50 Desmodesmus subspicatus (green algae): > 913 mg/l / 72 h
Method: OECD TG 201

NOEC Desmodesmus subspicatus (green algae): >= 913 mg/l / 72 h
Method: OECD TG 201

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Toxicity to bacteria EC 10 Activated sludge: > 100 mg/l / 3 h
Test substance: Structurally similar substance
Method: OECD TG 209

12.2. Persistence and degradability

Biodegradability Result: 54 % Not readily biodegradable.
Method: EC 92/69

12.3. Bioaccumulative potential

Bioaccumulation not bioaccumulative

12.4. Mobility in soil

Mobility Adsorption on the floor: 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, 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.

Uncleaned 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**D.O.T. Road/Rail**

- | | |
|---|--|
| 14.1. UN number: | UN 1993 |
| 14.2. UN proper shipping name: | FLAMMABLE LIQUID, N.O.S.(Propyltrimethoxysilane) |
| 14.3. Transport hazard class(es): | 3 |
| 14.4. Packing group: | III |
| 14.5. Environmental hazards (Marine pollutant): | -- |
| 14.6. Special precautions for user: | No |

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Air transport ICAO-TI/IATA-DGR

- 14.1. UN number: UN 1993
14.2. UN proper shipping name: Flammable liquid, n.o.s.(Propyltrimethoxysilane)
14.3. Transport hazard class(es): 3
14.4. Packing group: III
14.5. Environmental hazards: --
14.6. Special precautions for user: Yes
IATA-C: ERG-Code 3L
Maximum Net Quantity per Package 220 L
IATA-P: ERG-Code 3L
Maximum Net Quantity per Package 60 L

Sea transport IMDG-Code/GGVSee (Germany)

- 14.1. UN number: UN 1993
14.2. UN proper shipping name: FLAMMABLE LIQUID, N.O.S.(Propyltrimethoxysilane)
14.3. Transport hazard class(es): 3
14.4. Packing group: III
14.5. Environmental hazards (Marine pollutant): --
14.6. Special precautions for user: No
EmS: F-E,S-E
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: for transport approval see regulatory information

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:

- Acute Health Hazard
- Fire Hazard

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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 :	2
Flammability :	3
Physical Hazard :	1

NFPA Ratings

Health :	2
Flammability :	3
Reactivity :	1

16. Other information**Further information**

Revision date 05/07/2015

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 Hygienists
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(EC50)	LC50 or EC50
LOAEL	Low est observed adverse effect level
LOEL	Low est 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

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voc volatile organic compounds
WHMIS Workplace Hazardous Materials Information System
WHO World Health Organization