

**SAFETY DATA SHEET****Dynasylan® MTES**

Material no.		Version	<b>5.0 / US</b>
Specification	<b>116734</b>	Revision date	<b>06/25/2015</b>
Order Number		Print Date	<b>06/25/2015</b>
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**1. Identification****1.1. Product identifier**

Trade name	Dynasylan® MTES
Chemical Name	Triethoxy(methyl)silane
CAS-No.	2031-67-6

**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:**

<b>CHEMTREC - US &amp; CANADA:</b>	800-424-9300
<b>CHEMTREC MEXICO:</b>	01-800-681-9531
<b>CHEMTREC INTERNATIONAL:</b>	+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

**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.
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. 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. 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**

<b>• Methyltriethoxysilane</b>		
CAS-No.	2031-67-6	
Flammable liquids		Category 3
<b>• Ethanol 0.1% - 0.3%</b>		
CAS-No.	64-17-5	
Flammable liquids		Category 2

**4. First aid measures**

**4.1. Description of first aid measures**

**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. Obtain medical attention if irritation develops.

**Ingestion**

If accidentally swallowed, rinse mouth thoroughly with water and afterwards, drink plenty of water. In case of discomfort, obtain medical attention.

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

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**Symptoms**

None known

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

After absorbing large amounts of substance:  
administration of activated charcoal.  
Acceleration of gastrointestinal passage

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

Suitable extinguishing media: water spray, foam, Carbon dioxide (CO<sub>2</sub>), dry powder  
Unsuitable extinguishing media: High volume water jet

**5.2. Special hazards arising from the substance or mixture**

Flammable liquid. Vapors can travel to a source of ignition and flash back. Explosive mixtures may occur at temperatures at or above the flashpoint.

**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.  
Containers can build up pressure if exposed to heat (fire). Cool with water spray.  
As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

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**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**

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.

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

Avoid contact with skin, eyes and clothing. Wear personal protective equipment; see section 8. Vapors may spread long distances and travel to areas away from the work site before igniting or flashing back to the vapor source.  
Keep away from heat, sparks, flames and other sources of ignition. Keep container tightly closed. Use only with adequate ventilation.  
Wash thoroughly after handling.

**7.2. Conditions for safe storage, including any incompatibilities**

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**Advice on protection against fire and explosion**

Take precautionary measures against static charges, keep away from sources of ignition.

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.

**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.

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**8. Exposure controls/personal protection****8.1. Control parameters****Other information**

No substance-specific limiting value being known.

**8.2. Exposure controls****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

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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.

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**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	faint	
Odour Threshold	no data available	
pH	not determined	
Melting point/range	< -40 °C (literature value)	
Boiling point/range	142 °C	(1013 hPa)
	Method:	DIN 51 751
Flash point	30 °C	
	Method:	DIN EN ISO 13736
Evaporation rate	not determined	
Flammability (solid, gas)	no data available	
Lower explosion limit	not determined	
Upper explosion limit	not determined	
Vapour pressure	100 Pa	(25 °C)
Density	0.89 g/cm <sup>3</sup>	(20 °C)
	Method:	DIN 51757
Water solubility	2900 mg/l	(20 °C)
	Method:	QSAR-Method
	not miscible	

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decomposition by hydrolysis

Partition coefficient: n-octanol/water    log Pow: -2.4  
Method: QSAR-Method

Autoignition temperature    220 °C  
Method: DIN 51 794

Thermal decomposition    not determined

Viscosity, dynamic    0.6 mPa.s (20 °C)  
Method: DIN 53 015

**9.2. Other information**

Explosiveness    not explosive

Other information    Vapors can form explosive mixtures with air.

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**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    Vapours may form explosive mixture with air.

**10.4. Conditions to avoid**

Keep away from heat and sources of ignition.

Protect from moisture.

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**

water, Acids, alkalines

**10.6. Hazardous decomposition products**

Ethanol in case of hydrolysis

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

Acute oral toxicity    LD0 Rat: > 2000 mg/kg  
Method: OECD Test Guideline 401  
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity    LC50 Rat: > 13.5 mg/l / 4 h / Aerosol  
Method: OECD Test Guideline 403

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Acute dermal toxicity	LD50 Rat: > 2000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity
Skin irritation	Rabbit No skin irritation Method: OECD Test Guideline 404
Eye irritation	Rabbit No eye irritation Method: OECD Test Guideline 405
Sensitization	Maximisation Test (GPMT) Guinea pig: Does not cause skin sensitisation. Method: OECD Test Guideline 406
Repeated dose toxicity	Oral Rat NOAEL: 65.5 mg/kg Method: OECD TG 422
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  chromosomal aberration TK +/- mouse lymphoma cell (L5178Y) negative Method: OECD TG 473  gene mutation TK +/- mouse lymphoma cell (L5178Y) negative Method: OECD TG 476
Carcinogenicity	No evidence that cancer may be caused.
Toxicity to reproduction	Screening for reproductive/developmental toxicity Oral Rat NOAEL (No Observed Adverse Effect Level) of parents: 1310 mg/kg Method: OECD TG 422

**12. Ecological information****12.1. Toxicity**

Toxicity to fish	LC50 Danio rerio (zebra fish): > 500 mg/l / 96 h Method: OECD TG 203
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Toxicity in aquatic invertebrates	EC50 Daphnia magna (Water flea): > 500 mg/l / 48 h Method: OECD TG 202
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Toxicity to algae                      EC50 Pseudokirchneriella subcapitata: > 500 mg/l / 72 h  
Method: OECD TG 201

Toxicity to bacteria                      EC50 local activated sludge: > 100 mg/l / 3 h  
Method: OECD TG 209

**12.2. Persistence and degradability**

Biodegradability                      Result: Not readily biodegradable.

**12.3. Bioaccumulative potential**

Bioaccumulation                      low

**12.4. Mobility in soil**

Mobility                                      Adsorption on the floor: low.

**12.5. Other adverse effects**

Further Information                      No ecotoxicological studies are available.

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**13. Disposal considerations****13.1. Waste treatment methods****Product**

Waste must be disposed of in accordance with federal, state, provincial and local regulations.

Since empty containers retain product residue, follow MSDS and label warnings even after container is emptied.

Residual vapors might explode on ignition; do not apply heat, cut, drill, grind or weld on or near this container.

**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.

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**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.(triethoxy(methyl)silane)
14.3. Transport hazard class(es):	3
14.4. Packing group:	III
14.5. Environmental hazards (Marine)	--



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pollutant):

14.6. Special precautions for user: No

**Air transport ICAO-TI/IATA-DGR**

- 14.1. UN number: UN 1993  
14.2. UN proper shipping name: Flammable liquid, n.o.s.(triethoxy(methyl)silane)  
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  
IATA-P: ERG-Code 3L

**Sea transport IMDG-Code/GGVSee (Germany)**

- 14.1. UN number: UN 1993  
14.2. UN proper shipping name: FLAMMABLE LIQUID, N.O.S.(triethoxy(methyl)silane)  
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-D  
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:  
for transport approval see regulatory information

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**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

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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 :	0
Flammability :	3
Physical Hazard :	0

**NFPA Ratings**

Health :	0
Flammability :	3
Reactivity :	0

**16. Other information****Further information**

Revision date 06/25/2015

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

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**Legend**

<b>ACC</b>	American Chemistry Council
<b>ACGIH</b>	American Conference of Governmental Industrial Hygienists
<b>ACS</b>	Advisory Committee on Sustainability
<b>ADI</b>	Acceptable Daily Intake
<b>ASTM</b>	American Society for Testing and Materials
<b>ATP</b>	Adaptation to Technical Progress
<b>BCF</b>	Bioconcentration factor
<b>BOD</b>	Biochemical oxygen demand
<b>c.c.</b>	closed cup
<b>CAO</b>	Cargo Aircraft Only
<b>Carc</b>	Carcinogen
<b>CAS</b>	Chemical Abstract Services
<b>CDN</b>	Canada
<b>CEPA</b>	Canadian Environmental Protection Act
<b>CERCLA</b>	Comprehensive Environmental Response – Compensation and Liability Act
<b>CFR</b>	Code of Federal Regulations
<b>CMR</b>	carcinogenic-mutagenic-toxic for reproduction
<b>COD</b>	Chemical oxygen demand
<b>DIN</b>	German Institute for Standardization
<b>DMEL</b>	Derived minimum effect level
<b>DNEL</b>	Derived no effect level
<b>DOT</b>	Department of Transportation
<b>EC50</b>	half maximal effective concentration
<b>EPA</b>	Environmental Protection Agency
<b>ErC50</b>	Reduction of Growth Rate
<b>ERG</b>	Emergency Response Guide Book
<b>FDA</b>	Food and Drug Administration
<b>GHS</b>	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
<b>GLP</b>	Good Laboratory Practice
<b>GMO</b>	Genetic Modified Organism
<b>HCS</b>	Hazard Communication Standard
<b>HMIS</b>	Hazardous Materials Identification System
<b>IARC</b>	International Agency for Research on Cancer
<b>IATA</b>	International Air Transport Association
<b>IBC</b>	Intermediate Bulk Container
<b>ICAO-TI</b>	International Civil Aviation Organization- Technical Instructions
<b>ICCA</b>	International Council of Chemical Association
<b>ID</b>	Identification number
<b>IMDG</b>	International Maritime Dangerous Goods
<b>IUPAC</b>	International Union of Pure and Applied Chemistry
<b>ISO</b>	International Organization For Standardization
<b>LC50</b>	50 % Lethal Concentration
<b>LD50</b>	50 % Lethal Dose
<b>L(EC50)</b>	LC50 or EC50
<b>LOAEL</b>	Low est observed adverse effect level
<b>LOEL</b>	Low est observed effect level
<b>MARPOL</b>	International Convention for the Prevention of Pollution from Ships
<b>NFPA</b>	National Fire Protection Association
<b>NOAEL</b>	No observed adverse effect level
<b>NOEC</b>	no observed effect concentration
<b>NOEL</b>	no observed effect level
<b>o. c.</b>	open cup
<b>OECD</b>	Organisation for Economic Cooperation and Development
<b>OEL</b>	Occupational Exposure Limit
<b>OSHA</b>	Occupational Safety and Health Administration
<b>PBT</b>	Persistent, bioaccumulative, toxic
<b>PEC</b>	Predicted effect concentration
<b>PNEC</b>	Predicted no effect concentration
<b>RQ</b>	Reportable Quantity
<b>SDS</b>	Safety Data Sheet
<b>STOT</b>	Specific Target Organ Toxicity
<b>UN</b>	United Nations
<b>vPvB</b>	very persistent, very bioaccumulative

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