

SAFETY DATA SHEET

Classified in accordance 29 CFR 1910.1200

1. Identification

Product identifier: Dynasylan® AMMO

Chemical name:
3-(Trimethoxysilyl)propylamine

Other means of identification
CAS Number: 13822-56-5

Recommended restrictions

Recommended use: For industrial use Coupling agent Crosslinking agents Surface modifier
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

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E-mail : product-regulatory-services@evonik.com

Emergency telephone number:

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

2. Hazard(s) identification

Hazard Classification

Physical Hazards

Flammable liquids Category 4

Health Hazards

Skin irritation Category 2

Serious Eye Damage/Eye Irritation Category 1

Label Elements

Hazard Symbol:



Signal Word:	Danger
Hazard Statement:	Combustible liquid. Causes skin irritation. Causes serious eye damage.
Precautionary Statements	
Prevention:	Keep away from heat/sparks/open flames/hot surfaces. No smoking. Wash thoroughly after handling. Wear protective gloves/eye protection/face protection.
Response:	IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.
Storage:	Store in a well-ventilated place. Keep cool.
Disposal:	Dispose of contents/ container to an approved waste disposal plant.
Hazard(s) not otherwise classified (HNOC):	None.

3. Composition/information on ingredients

Chemical name:
 3-(Trimethoxysilyl)propylamine

Substances

Chemical Identity	CAS number	Content in percent (%) [*]
3-(Trimethoxysilyl)propylamine	13822-56-5	>=90 - <=100%
methanol	67-56-1	<0.3%
Toluene	108-88-3	<0.4%

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

A specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Description of necessary first-aid measures

General information:	Take off all contaminated clothing immediately.
Inhalation:	If aerosol or mists are formed: Move victims into fresh air. In case of persistent discomfort: Consult doctor immediately.

Skin Contact:	Wash off immediately with plenty of water. Consult a doctor in the event of permanent skin irritation.
Eye contact:	With eye held open, thoroughly rinse immediately with plenty of water for at least 10 minutes. Continue rinsing process with eye rinsing solution. Protect unharmed eye. Call ambulance. (Cue: caustic burn of the eyes) Immediate further treatment in eye clinic/by eye doctor. continue rinsing eye until arrival at ophthalmic hospital.
Ingestion:	Have the mouth rinsed with water. Only when patient fully conscious: Have patient drink plenty of water in small sips. Call a physician immediately.
Personal Protection for First-aid Responders:	In case of fire: wear a self contained respiratory apparatus

Most important symptoms/effects, acute and delayed

Symptoms:	After absorbing large amounts of substance: Liberation of reaction products (Methanol) can lead to symptoms of poisoning. Possible signs of poisoning: daze, dizziness, nausea, colicky abdominal pain, respiratory disturbance. Symptoms upon increasing intoxication: dysopia, loss of eyesight.
Hazards:	None known.

Indication of immediate medical attention and special treatment needed

Treatment:	If required, therapy of irritative effect. Treatment Early endoscopy in order to assess mucosa lesions in the oesophagus and stomach which may appear. If necessary, aspirate leftover substance. Detection of substance (Methanol) possible in: Blood Antidote treatment: ethanol.
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5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:	Water spray. foam Carbon Dioxide. dry powder
Unsuitable extinguishing media:	high volume water jet

Specific hazards arising from the chemical:	Hazardous fumes in fires, specific to the product: Nitrogen Oxides Combustible liquid. Vapors can travel to a source of ignition and flash back. Explosive mixtures may occur at temperatures at or above the flashpoint.
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Special protective equipment and precautions for firefighters

Special fire fighting procedures:	As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear. Containers can build up pressure if exposed to heat (fire). Cool with water spray.
Special protective equipment for fire-fighters:	In case of fire: wear a self contained respiratory apparatus

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:	Use personal protective equipment.
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).
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):	Application, processing: Provide good ventilation or extraction.
Safe handling advice:	<p>Application, processing: Provide good ventilation or extraction. 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. Use protective clothing / face shield if necessary. Avoid contact with eyes, skin, 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.</p> <p>Keep away from heat, sparks, flames and other sources of ignition. Keep container tightly closed. Use only with adequate ventilation. Follow all SDS/label precautions even after container is emptied because it may retain product residues.</p>
Contact avoidance measures:	No data available.
Hygiene measures:	When using, do not eat, drink or smoke. Wash face and/or hands before break and end of work. Take off immediately all contaminated clothing. Wash contaminated clothing before reuse.

Storage

Safe storage conditions:	<p>Keep containers tightly closed in a cool, well-ventilated place. Protect from moisture. Keep away from sources of ignition - No smoking. Residual vapors might explode on ignition; do not apply heat, cut, drill, grind or weld on or near this container. 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.</p> <p>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.</p> <p>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.</p>
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Safe packaging materials: No data available.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
Toluene	TWA	20 ppm	US. ACGIH Threshold Limit Values (03 2016)
	STEL	150 ppm 560 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	REL	100 ppm 375 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	TWA	200 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
	Ceiling	300 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
methanol	MAX. CONC	500 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
	TWA	200 ppm	US. ACGIH Threshold Limit Values (03 2016)
	STEL	250 ppm	US. ACGIH Threshold Limit Values (03 2016)
	STEL	250 ppm 325 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	REL	200 ppm 260 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	200 ppm 260 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (03 2016)

Exposure guidelines

methanol	US. ACGIH Threshold Limit Values	Can be absorbed through the skin.
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Appropriate Engineering Controls

Application, processing: Provide good ventilation or extraction.

Individual protection measures, such as personal protective equipment

Eye/face protection: close-fitting protective goggles (e.g. closed goggles)

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., Suitability for specific workplaces should be clarified with protective glove manufacturers., Use impermeable gloves.

Skin and Body Protection:

When handling larger quantities: chemical protective suit, disposable protective clothing, acid-proof (Solvent-resistant) 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.

- 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:** When using, do not eat, drink or smoke. Wash face and/or hands before break and end of work. Take off immediately all contaminated clothing. Wash contaminated clothing before reuse.

9. Physical and chemical properties

Appearance

Physical state:	liquid
Form:	liquid
Color:	colourless
Odor:	amine-like, ammoniacal
Odor Threshold:	not determined
pH:	> 9.0 (20 g/l, 20 °C)
Freezing point:	< -60 °C literature
Boiling Point:	194 °C (1,013 hPa) (DIN 51 751)
Flash Point:	90 °C (DIN EN ISO 2719 (Pensky-Martens, Closed Cup))
Evaporation Rate:	No data available.
Flammability (solid, gas):	No data available.

Explosive limit - upper (%):	not determined
Explosive limit - lower (%):	not determined
Vapor pressure:	18 Pa (20 °C) (QSAR)
Vapor density (air=1):	No data available.
Density:	approx. 1.02 g/cm ³ (20 °C) (DIN 51757)
Relative density:	No data available.
Solubility(ies)	
Solubility in Water:	not miscible decomposition by hydrolysis
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	(QSAR) No data available.
Self Ignition Temperature:	No data available.
Decomposition Temperature:	not determined
Kinematic viscosity:	No data available.
Dynamic viscosity:	2 mPa.s (20 °C, DIN 53 015)
Other information	
Explosive properties:	not explosive
Oxidizing properties:	No data available.
Minimum ignition temperature:	295 °C (1,013 hPa, DIN 51 794)

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:	Exothermic reaction with: acids

Conditions to avoid:	Keep away from heat and sources of ignition. Vapours can form explosive mixtures with air.
Incompatible Materials:	acids
Hazardous Decomposition Products:	Methanol in case of hydrolysis. Alcohol formed by hydrolysis lowers the flash point of the product.

11. Toxicological information

Information on likely routes of exposure

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

Symptoms related to the physical, chemical and toxicological characteristics

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

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral	
Product:	LD 50 (Rat): > 2,000 mg/kg
Dermal	
Product:	LD 50 (Rabbit): > 10,000 mg/kg
Inhalation	
Product:	No data available.

Repeated dose toxicity

Product:	NOAEL (Rat(male/female), Oral): 200 mg/kg LOAEL (Rat(male/female), Oral): 600 mg/kg tested substance: Structurally similar substance
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Skin Corrosion/Irritation

Product:	Skin irritation OECD Test Guideline 404 (Rabbit): Skin irritation
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Serious Eye Damage/Eye Irritation

Product:	Risk of serious damage to eyes. Rabbit: Risk of serious damage to eyes.
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Respiratory or Skin Sensitization

Product:	maximization test, OECD Test Guideline 406 (Guinea Pig): Not a skin sensitizer.
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Carcinogenicity

Product: To our knowledge, 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, IARC, or OSHA.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

US. National Toxicology Program (NTP) Report on Carcinogens:

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

Germ Cell Mutagenicity

In vitro

Product: Ames test (OECD TG 471): negative
gene mutation (OECD TG 476): negative tested substance: Structurally similar substance
Chromosomal aberration (OECD TG 473): negative tested substance: Structurally similar substance

In vivo

Product: Micronucleus test (OECD TG 474) Intraperitoneal (Mouse): negative tested substance: Structurally similar substance

Reproductive toxicity

Product: An Expert Judgment stated that no classification is necessary based on present knowledge.

Specific Target Organ Toxicity - Single Exposure

Product: no evidence for hazardous properties

Specific Target Organ Toxicity - Repeated Exposure

Product: no evidence for hazardous properties

Aspiration Hazard

Product: No evidence of aspiration toxicity

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: LC 50 (Danio rerio (zebra fish), 96 h): > 934 mg/l tested substance: Structurally similar substance

Aquatic Invertebrates

Product: EC 50 (Daphnia magna (Water flea), 48 h): 331 mg/l tested substance: Structurally similar substance

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Components:
Toluene NOEC (Oncorhynchus kisutch (coho salmon), 40 d): 1.39 mg/l literature

Aquatic Invertebrates

Product: No data available.

Components:
Toluene NOEC (Ceriodaphnia dubia (water flea), 7 d): 0.74 mg/l

Toxicity to Aquatic Plants

Product: EC 50 (Desmodesmus subspicatus, 72 h): > 1,000 mg/l tested substance:
Structurally similar substance

Persistence and Degradability

Biodegradation

Product: 67 % (28 d, (DOC; Die Away test - 79/831/EEC part C.4-A)) tested
substance: Structurally similar substance

BOD/COD Ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: not bioaccumulative

Partition Coefficient n-octanol / water (log Kow)

Product: No data available.

Components:

methanol Log Kow: -0.77

Toluene Log Kow: 2.65 Measured

Mobility in soil: Adsorption on the floor: low.

Other adverse effects: No ecotoxicological studies are available. 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, 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.

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 : NA 1993
Proper shipping name : Combustible liquid, n.o.s.
(3-Aminopropyltrimethoxysilane)
Class : CBL
Packing group : III
Labels : NONE
ERG Code : 128
Marine pollutant : no
Remarks : Not regulated in packages 450 liter or less.

International Regulations**UNRTDG**

Not regulated as a dangerous good

IATA-DGR

Not regulated as a dangerous good

Remarks : Not hazardous freight in air traffic (ICAO-TI / IATA-DGR).

IMDG-Code

Not regulated as a dangerous good

Remarks : Not classified as hazardous sea cargo (IMDG code), FOR
USA ONLY: In packagings exceeding 450 L, this product must
be classified, placarded, marked and shipped as Combustible
Liquid to the USA.

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)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Toluene	1000 lbs.
methanol	5000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Flammable (gases, aerosols, liquids, or solids), Skin Corrosion or Irritation, Serious eye damage or eye irritation

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

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

SARA 311/312 Hazardous Chemical

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>
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SARA 313 (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, Toluene, 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.

US. New Jersey Worker and Community Right-to-Know Act

No ingredient regulated by NJ Right-to-Know Law present.

US. Massachusetts RTK - Substance List

No ingredient regulated by MA Right-to-Know Law present.

US. Pennsylvania RTK - Hazardous Substances

No ingredient regulated by PA Right-to-Know Law present.

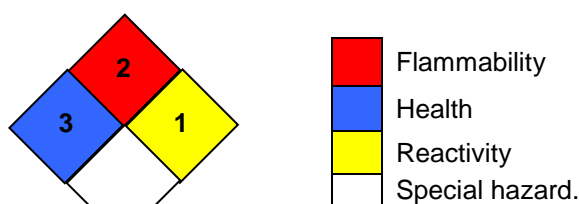
US. Rhode Island RTK

No ingredient regulated by RI Right-to-Know Law present.

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

Health	3
Flammability	2
Physical Hazards	1
PERSONAL PROTECTION	

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: 05/20/2019

Version #: 1.0

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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