SAFETY DATA SHEET

Classified in accordance 29 CFR 1910.1200

1. Identification

Product identifier: Dynasylan® DAMO
Chemical name:
N-(3-(trimethoxysilyl)propyl)ethylenediamine

Other means of identification
CAS Number: 1760-24-3

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 299 Jefferson Road Parsippany, NJ 07054 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

Health Hazards

Serious Eye Damage/Eye Irritation	Category 1
Skin sensitizer	Category 1B
Specific Target Organ Toxicity - Single Exposure	Category 3 (Respiratory tract irritation.)

Environmental Hazards

Acute hazards to the aquatic environment	Category 2

Label Elements

Hazard Symbol:

Signal Word: Danger

Hazard Statement:

Causes serious eye damage.
May cause an allergic skin reaction.
May cause respiratory irritation.
Toxic to aquatic life.

Precautionary Statements

Prevention: 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. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response: IF ON SKIN: Wash with plenty of soap and water. 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. 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.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

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:
N-(3-(trimethoxysilyl)propyl)ethylenediamine

Substances

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
N-[3-(trimethoxysilyl)propyl]ethylenediamine		1760-24-3	>=98%

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

Composition information of impurities and stabilizers

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
methanol		67-56-1	<0.5%

* 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: Immediately remove contaminated clothing.

Inhalation: If aerosol or mists are formed: Move to fresh air. Get medical attention if any discomfort continues.

Skin Contact: Wash off immediately with plenty of water. If skin irritation persists, call a physician.

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. Get medical attention immediately.

Personal Protection for First-aid Responders: No data available.

Most important symptoms and effects, both 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. Allergic reactions cannot be excluded. Treatment of allergic reaction if necessary.

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:	Hazardous fumes in fires, specific to the product: Nitrogen Oxides

Special protective equipment and precautions for firefighters

Special fire fighting procedures:	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.
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. Avoid contact with skin and eyes.
Methods and material for containment and cleaning up:	Soak up with absorbent material, e.g., sand, silica gel, acid binder, universal binder or sawdust. Place in a marked, sealable container and dispose of in accordance with existing federal, provincial, state and local regulations.
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 for good ventilation if vapours/aerosols are formed. Ensure good ventilation during processing.
Safe handling advice:	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.
Contact avoidance measures:	No data available.

Storage

Safe storage conditions:	Normal measures for preventive fire protection.Keep containers tightly closed in a cool, well-ventilated place. Protect from moisture.
Safe packaging materials:	No data available.

8. Exposure controls/personal protection

Control Parameters
Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values		Source
methanol	TWA	200 ppm		US. ACGIH Threshold Limit Values, as amended (03 2016)
	STEL	250 ppm		US. ACGIH Threshold Limit Values, as amended (03 2016)
	STEL	250 ppm	325 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2010)
	REL	200 ppm	260 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2010)
	PEL	200 ppm	260 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended (03 2016)

Please refer to the latest edition of the appropriate source text and consult an industrial hygienist or similar professional, or local agencies, for further information.

Biological Limit Values

Chemical name	Parameters / Sampling Time	Exposure Limit Values	Source

Appropriate Engineering Controls Provide for good ventilation if vapours/aerosols are formed. Ensure good ventilation during processing.

Individual protection measures, such as personal protective equipment

Eye/face protection: Use chemical splash goggles or face shield.

Skin Protection
Hand Protection: Material: Butyl rubber.
Break-through time: >= 480 min
Material: Fluorinated rubber (Viton)
Break-through time: >= 480 min
Additional Information: Use impermeable gloves., 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.

Skin and Body Protection: suitable protective clothing - Use disposable clothing if appropriate. 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:	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:	amine-like
Odor Threshold:	No data available.
Freezing point:	< -4 °F/< -20 °C No data available.
Boiling Point:	284 °F/140 °C (20 hPa) (DIN 51 356) Approximate 500 °F/260 °C (1,013 hPa) (calculated)
Flammability:	Not applicable
Upper/lower limit on flammability or explosive limits	
Explosive limit - upper:	No data available.
Explosive limit - lower:	No data available.
Flash Point:	277 °F/136 °C (DIN EN ISO 2719)
Self Ignition Temperature:	572 °F/300 °C (1,013 hPa, ASTM E 659)
Decomposition Temperature:	No data available.
pH:	10 (10 g/l, 68 °F/20 °C)
Viscosity	
Dynamic viscosity:	6 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):	Not applicable
Vapor pressure:	1.5 hPa (68 °F/20 °C)
Relative density:	No data available.
Density:	1.03 g/cm3 (68 °F/20 °C) (DIN 51757)
Bulk density:	No data available.
Relative vapor density:	No data available.
Particle characteristics	
Particle Size:	Not applicable
Particle Size Distribution:	Not applicable
Specific surface area:	No data available.
Surface charge/Zeta	No data available.

potential:

Shape:	Not applicable
Crystallinity:	Not applicable
Surface treatment:	Not applicable

Other information

Explosive properties:	Not explosive
Minimum ignition temperature:	No data available.
Peroxides:	Not applicable
Evaporation Rate:	No data available.

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 moisture. Keep away from heat and sources of ignition.
Incompatible Materials:	Acids. Water.
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): > 2,000 mg/kg (OECD 401) Not toxic after single exposure;
Dermal **Product:**	LD 50 (Rat): > 2,000 mg/kg (OECD 402) Not toxic after single exposure;
Inhalation **Product:**	Not classified for acute toxicity based on available data.

Repeated dose toxicity

Product:	NOAEL (Rat(Female, Male), Oral, 7 days a week): >= 500 mg/kg NOAEC (Rat(Female, Male), Inhalation - dust and mist, 90 d, 5 days/weeks,

6 hours/day): 15 mg/m³

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

Serious Eye Damage/Eye Irritation
Product: Risk of serious damage to eyes. Rabbit:

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

Carcinogenicity
Product: Contains no carcinogenic substances as defined by NTP, IARC and/or OSHA.

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

In vitro
Product: Ames test (OECD 471): negative;
gene mutation test (OECD 476): negative;

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

Reproductive toxicity
Product: No data available.
Components:

N-[3-(trimethoxysilyl)propyl]ethylenediamine	no evidence of reproductiontoxic properties
methanol	Not classified

Specific Target Organ Toxicity - Single Exposure
Product: Category 3 with respiratory tract irritation.

Specific Target Organ Toxicity - Repeated Exposure
Product: no evidence for hazardous properties

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 (Brachydanio rerio (zebrafish), 96 h): 597 mg/l
LC 0 (Brachydanio rerio (zebrafish), 96 h): 344 mg/l

Aquatic Invertebrates

Product: EC 50 (Daphnia magna, 48 h): 81 mg/l

Toxicity to Aquatic Plants

Product: EC 50 (Desmodesmus subspicatus (green algae), 72 h): 8.8 mg/l (OECD 201)

Toxicity to microorganisms

Product: EC 10 (Pseudomonas putida, 16 h): 25 mg/l (DIN 38412 part 8)

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic Invertebrates

Product: NOEC (Daphnia magna, 21 d): > 1 mg/l (OECD 211)

Toxicity to Aquatic Plants

Product: No data available.

Toxicity to microorganisms

Product: EC 10 (Pseudomonas putida, 16 h): 25 mg/l (DIN 38412 part 8)

Persistence and Degradability

Biodegradation

Product: 39 % (28 d, (DOC; Die Away test / 92/69/EEC part C.4-A)), Not readily degradable.

BOD/COD Ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: low

Partition Coefficient n-octanol / water (log Kow)

Product: Log Kow: Not applicable

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: Toxic to aquatic life.

13. Disposal considerations

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

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
Not regulated as a dangerous good
Remarks : Not dangerous according to transport regulations.

International Regulations

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

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):

Chemical Identity
methanol
ethylenediamine; 1,2-diaminoethane

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Serious eye damage or eye irritation, Respiratory or Skin Sensitization, Specific target organ toxicity (single or repeated exposure)

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

Chemical Identity
ethylenediamine; 1,2-diaminoethane

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required
None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

Chemical Identity
ethylenediamine; 1,2-diaminoethane

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

Chemical Identity
ethylenediamine; 1,2-diaminoethane

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.

US. New Jersey Worker and Community Right-to-Know Act
None present or none present in regulated quantities.

US. Massachusetts RTK - Substance List

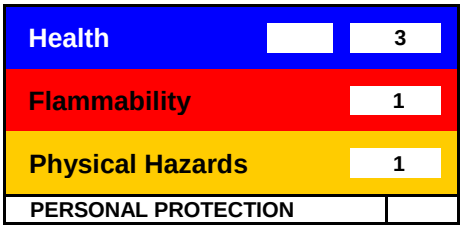
Chemical Identity
ethylenediamine; 1,2-diaminoethane

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.

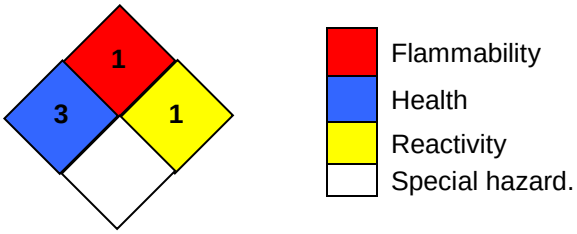
16.Other information, including date of preparation or last revision

HMIS Hazard ID



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

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