1. Identification

1.1. Product identifier

Trade name: Dynasylan® DAMO

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

CAS-No.: 1760-24-3

1.2. Recommended use of the chemical and restrictions on use

Relevant applications identified: For industrial use

Function: Coupling agent, Crosslinking agents, Surface modifier

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

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Acute toxicity (Inhalation) Category 4 H332

Serious eye damage Category 1 H318

Skin Sensitisation Category 1 H317

Acute aquatic toxicity Category 3 H402

2.2. Label elements

Statutory basis: Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

hazard-defining component(s) (GHS)

• N-[3-(trimethoxysilyl)propyl]ethylenediamine
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Dynasylan® DAMO

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- Methanol
  Symbol(s)

Signal word Danger

Hazard statement H317 - May cause an allergic skin reaction.
H318 - Causes serious eye damage.
H332 - Harmful if inhaled.
H402 - Harmful to aquatic life.

Precautionary statement:
Prevention P261 - Avoid breathing dust/ fume/ gas/ mist/ vapours/spray.
P271 - Use only outdoors or in a well-ventilated area.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/ eye protection/ face protection.

Precautionary statement: Reaction
P302 + P352 - IF ON SKIN: Wash with plenty of water/ soap.
P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338 + P310 - 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 or doctor/ physician.
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention.
P363 - Wash contaminated clothing before reuse.

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

- N-[3-(trimethoxysilyl)propyl]ethylenediamine
  CAS-No. 1760-24-3
  Acute toxicity (Inhalation) Category 4
  Serious eye damage Category 1
  Skin Sensitisation Category 1

- Methanol < 0.5%
  CAS-No. 67-56-1
  Flammable liquids Category 2
  Acute toxicity (Oral) Category 3
  Acute toxicity (Inhalation) Category 3
  Acute toxicity (Dermal) Category 3
  Specific target organ toxicity - single exposure Category 1

Other information
This material is classified as hazardous under OSHA regulations.
4. First aid measures

4.1. Description of first aid measures

**General advice**
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.

4.2. 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.

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

5.1. Extinguishing media

Suitable extinguishing media: water spray, foam, Carbon dioxide (CO2), dry powder

Unsuitable extinguishing media: High volume water jet

5.2. Special hazards arising from the substance or mixture

Hazardous fumes in fires, specific to the product:
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. Avoid contact with skin and eyes.

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

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.

7. Handling and storage

7.1. Precautions for safe handling

Provide good ventilation or extraction.

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion

Normal measures for preventive fire protection.

Storage

Keep containers tightly closed in a cool, well-ventilated place. Protect from moisture.

8. Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Time Weighted Average (TWA): (ACGIH)</th>
<th>Short Term Exposure Limit (STEL): (ACGIH)</th>
<th>Skin designation: (ACGIH)</th>
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</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>200 ppm</td>
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<td>250 ppm</td>
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<td>Can be absorbed through the skin.</td>
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<td>200 ppm 260 mg/m3</td>
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<td></td>
<td>Can be absorbed through the skin.</td>
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</tr>
</tbody>
</table>

Permissible exposure limit: (OSHA Z1)

Time Weighted Average (TWA) Permissible Exposure Limit (PEL): (US CA OEL)

Ceiling Limit Value: (US CA OEL)

Short Term Exposure Limit (STEL): (US CA OEL)
8.2. Exposure controls

Engineering measures
Provide for good ventilation if vapors/aerosols are formed. Ensure good ventilation during processing.

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 $\geq 480$ min

Glove material for example, Fluorinated rubber (Viton)
Material thickness 0.4 mm
Break through time $\geq 480$ min

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.

Eye protection
Use chemical splash goggles or face shield.

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.

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 colourless
Form liquid
Odour amine-like

Odour Threshold not determined
**SAFETY DATA SHEET**

**Dynasylan® DAMO**

**Material no.** 116485

**Specification**

**Order Number**

**Version** 6.2 / US

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**pH**

10 (10 g/l) (20 °C)

**Melting point/range**

< -20 °C

**Boiling point/range**

140 °C (20 hPa)

Method: DIN 51 356

**Flash point**

136 °C

Method: DIN EN ISO 2719 (Pensky-Martens, Closed Cup)

**Evaporation rate**

not determined

**Flammability (solid, gas)**

no data available

**Lower explosion limit**

not determined

**Upper explosion limit**

not determined

**Vapour pressure**

1.5 hPa (20 °C)

**Vapour density**

no data available

**Relative density**

no data available

**Density**

1.03 g/cm³ (20 °C)

Method: DIN 51757

**Water solubility**

not miscible

decomposition by hydrolysis

**Partition coefficient: n-octanol/water**

not applicable

**Autoignition temperature**

no data available

**Thermal decomposition**

not determined

**Viscosity, dynamic**

6 mPa.s (20 °C)

Method: DIN 53 015

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**9.2. Other information**

**Explosiveness**

not explosive

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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

Exothermic reaction with: acids

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10.4. **Conditions to avoid**
Keep away from heat and sources of ignition.

10.5. **Incompatible materials**
Water, Acids

10.6. **Hazardous decomposition products**
Methanol in case of hydrolysis.

Stable under normal conditions.

11. **Toxicological information**

11.1. **Information on toxicological effects**

**Acute oral toxicity**
- LD50 Rat: > 2000 mg/kg
  - Method: OECD Test Guideline 401
  - Assessment: The substance or mixture has no acute oral toxicity

  LD50 rat: 7684 mg/kg
  - Method: literature
  - RTECS

  Possibly harmful.
  (methanol in case of hydrolysis)

**Acute inhalation toxicity**
- LC50 Rat: 1.49 - 2.44 mg/l / 4 h / dust/mist
  - Method: OECD Test Guideline 403

**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
  - Risk of serious damage to eyes.
  - Method: OECD Test Guideline 405

**Sensitization**
- Maximization test guinea pig: May cause sensitisation by skin contact.
  - Method: OECD Test Guideline 406

**Repeated dose toxicity**
- Oral Rat
  - NOAEL: >= 500 mg/kg
  - Method: OECD TG 422

  no evidence for hazardous properties

  no evidence for hazardous properties

  Risk of aspiration toxicity
  - No evidence of aspiration toxicity

**Genotoxicity in vitro**
- Ames test S. typhimurium / E. coli
negative
Method: OECD TG 471

gene mutation CHO-cells
negative
Method: OECD TG 476

Genotoxicity in vivo
chromosomal aberration Mouse intraperitoneal (i.p.)
negative
Method: OECD TG 474

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
Screening for reproductive/developmental toxicity Oral Rat
NOAEL (No Observed Adverse Effect Level) of parents:
>= 500 mg/kg
Method: OECD TG 422

12. Ecological information

12.1. Toxicity

Toxicity to fish
LC50 Brachydanio rerio: 597 mg/l / 96 h
Method: OECD TG 203

LC0 Brachydanio rerio: 344 mg/l / 96 h
Method: OECD TG 203

Toxicity in aquatic invertebrates
EC50 Daphnia magna: 81 mg/l / 48 h
Method: OECD TG 202

NOEC Daphnia magna: > 1 mg/l / 21 d
Method: OECD TG 211

Toxicity to algae
EC50 Desmodesmus subspicatus (green algae): 126 mg/l / 72 h
Method: EC 92/69

NOEC Desmodesmus subspicatus (green algae): 20 mg/l / 72 h
Method: EC 92/69

Toxicity to bacteria
EC 10 Pseudomonas putida: 25 mg/l / 16 h
Method: DIN 38412 part 8

Toxicity in organisms which live in the soil
NOEC Eisenia fetida: >= 1000 mg/kg / 14 d
Method: OECD 207

12.2. Persistence and degradability

Biodegradability
Exposure time: 28 d
Result: 39 % Not readily biodegradable.
Method: (DOC; Die Away test / 92/69/EEC part C.4-A)
12.3. **Bioaccumulative potential**

Bioaccumulation: low

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, state, provincial and local regulations.

**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**

Not dangerous according to transport regulations.

14.1. UN number: --

14.2. UN proper shipping name: --

14.3. Transport hazard class(es): --

14.4. Packing group: --

14.5. Environmental hazards (Marine pollutant): --

14.6. Special precautions for user: Yes

Not dangerous according to transport regulations.

15. **Regulatory information**

**US Federal Regulations**

**OSHA**

If listed below, chemical specific standards apply to the product or components:
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- None listed

Clean Air Act Section (112)

If listed below, components present at or above the de minimus level are hazardous air pollutants:

- Methanol
  CAS-No. 67-56-1

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

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:

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

- Methanol
  CAS-No. 67-56-1

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
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Health : 3
Flammability : 1
Physical Hazard : 1

NFPA Ratings

Health : 2
Flammability : 1
Reactivity : 1

16. Other information

Further information

Revision date 06/10/2015

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

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</tbody>
</table>

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