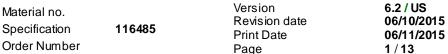
Dynasylan® DAMO





#### 1. Identification

#### 1.1. Product identifier

Trade name Dynasylan® DAMO

Chemical Name N-(3-(trimethoxysilyI)propyI)ethylenediamine

CAS-No. 1760-24-3

#### 1.2. Recommended use of the chemical and restrictions on use

Relevant applications identified

Function Coupling agent

Crosslinking agents Surface modifier

For industrial use

### 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 +1 703-527-3887 (collect calls accepted)

INTERNATIONAL:

Product Regulatory : 973-929-8060

Services

# 2. Hazards identification

#### 2.1. Classification of the substance or mixture

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

Acute to xicity (Inhalation)Category 4H332Serious eye damageCategory 1H318Skin SensitisationCategory 1H317Acute aquatic toxicityCategory 3H402

## 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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 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:

P261 - Avoid breathing dust/ fume/ gas/mist/ vapours/spray.

Prevention 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:

P302 + P352 - IF ON SKIN: Wash with plenty of water/ soap.

Reaction 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:

Dispos al

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 to xicity (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.

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#### 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

#### Symptom s

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:

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nitrogen oxides (NOx)

### 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.

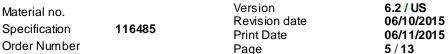
Protect from moisture.

# 8. Exposure controls/personal protection

### 8.1. Control parameters

Methanol		
CAS-No.	67-56-1	T
Control parameters	200 ppm	Time Weighted Average (TWA):(ACGIH)
Control parameters	250 ppm	Short Term Exposure Limit (STEL):(ACGIH)
Control parameters		Skin designation:(ACGIH)
	Can be absorbed through the skin.	
Control parameters	200 ppm	Permissible exposure limit:(OSHAZ1)
	260 mg/m3	
Control parameters	200 ppm	Time Weighted Average (TWA) Permissible
	260 mg/m3	Exposure Limit (PEL):(US CA OEL)
Control parameters	1000 ppm	Ceiling Limit Value:(US CA OEL)
Control parameters	250 ppm	Short Term Exposure Limit (STEL):(US CA
	325 mg/m3	OEL)
Control parameters		Skin designation:(US CA OEL)

### Dynasylan® DAMO





	Can be absorbed through the skin.	
Control parameters	200 ppm 260 mg/m3	Time Weighted Average (TWA):(TN OEL)
Control parameters	250 ppm 325 mg/m3	Short Term Exposure Limit (STEL):(TN OEL)
Control parameters		Skin designation:(TN OEL)
	Can be absorbed through the skin.	

## 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 >= 480 min

Glove material for example, Fluorinated rubber (Viton)

Material thickness 0.4 mm

Break through time >= 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.

#### Eve 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

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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

# 9.2. Other information

Explosiveness not explosive

## 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

Assessment of STOT single

exposure

no evidence for hazardous properties

Assessment of STOT repeat

exposure

no evidence for hazardous properties

Risk of aspiration toxicity

No evidence of aspiration toxicity

Gentoxicity in vitro Ames test S. typhimurium / E. coli

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negative

Method: OECD TG 471

gene mutation CHO-cells

negative

Method: OECD TG 476

Gentoxicity 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 >= 500 mg/kg

Adverse Effect Level) of

parents:

NOAEL F1: >= 500 mg/kg

Method: OECD TG 422

### 12. Ecological information

## 12.1. Toxicity

Toxicity to fish LC50 Brachy danio 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

EC50 Daphnia magna: 81 mg/l / 48 h

invertebrates 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

NOEC Eisenia foetida: >= 1000 mg/kg / 14 d

live in the soil 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)

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### 12.3. Bioaccumulative potential

Bioaccumulation Iow

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**

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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 Hygenists

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

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
DM EL 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 Grow th 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 **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

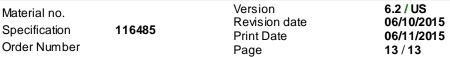
RQ Reportable Quantity SDS Safety Data Sheet

STOT Specific Target Organ Toxicity

**UN** United Nations

vPvB very persistent, very bioaccumulative

Dynasylan® DAMO





voc

volatile organic compounds Workplace Hazardous Materials Information System WHMIS

WHO World Health Organization