

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Trade name	: Xymertol Hardener 243
Chemical name	: Hexamethylene diisocyanate oligomers Isocyanurate
EC no	: 931-274-8
CAS No	: 28182-81-2
REACH registration No	: 01-2119485796-17-0002

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category	: Industrial use, professional use
Industrial/Professional use spec	: Manufacture of substances Formulation Manufacture of paints and varnishes
Use of the substance/mixture	: See product datasheet for detailed information

1.2.2. Uses advised against

Consumer use

1.3. Details of the supplier of the safety data sheet

Xymertec Ltd
Unit A, Linton Trading Estate,
Bromyard,
Herefordshire
HR7 4QT
Tel. +44(0)1885 483124

info@xymertec.com - www.xymertec.com

1.4. Emergency telephone number

Emergency number : +44 (0)7910 117144

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]Mixture/Substance: SDS EU 2015: According to Annex II of Regulation

Acute Tox. 4 (Inhalation)

H 3 3 2

Skin Sens. 1

H 3 1 7

STOT SE 3 H335

Full text of H-statements: see section 16

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2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP] Extra labelling to display Extra classification(s) to display

Hazard pictograms (CLP) :



GHS07

Signal word (CLP) :

Warning

Hazard statements (CLP) :

H332 - Harmful if inhaled
H317 - May cause an allergic skin reaction
H335 - May cause respiratory irritation

Precautionary statements (CLP) :

P260 - Do not breathe dust, fume, gas, mist, spray, vapours
P285 - In case of inadequate ventilation wear respiratory protection
P280 - Wear protective gloves, protective clothing, face shield, eye protection
P304+P340 - IF INHALED: remove victim to fresh air and keep at rest in a position comfortable for breathing
P302+P352 - IF ON SKIN: Wash with plenty of soap and water
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
P403+P233 - Store in a well-ventilated place. Keep container tightly closed

2.3. Other hazards

Other hazards not contributing to the classification : Combustible liquid. Reacts on contact with water releasing carbon dioxide (CO₂).

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substance

Name : Xymertol Hardener 243

CAS No : 28182-81-2

EC no : 931-274-8

Name	Product identifier	%
Hexamethylene diisocyanate oligomers	(CAS No) 28182-81-2 (EC no) 931-274-8 (REACH-no) 01-2119485796-17-0002	75-90
hexamethylene-di-isocyanate (Hazardous impurities)	(CAS No) 822-06-0 (EC no) 212-485-8 (EC index no) 615-011-00-1 (REACH-no) 01-211947571-37-0001	< 0,4

Specific concentration limits:

Name	Specific concentration limits
hexamethylene-di-isocyanate (Hazardous impurities)	(C >= 0,5) Resp. Sens. 1, H334 (C >= 0,5) Skin Sens. 1, H317

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Move the affected person away from the contaminated area and into the fresh air. Get immediate medical advice/attention. If possible show him this sheet. Failing this, show him the packaging or label.

First-aid measures after skin contact : Wash with soapy water. Wash off immediately and plentifully with water for at least 20 minutes. If case of redness or irritation, call a doctor. If possible show him this sheet. Failing this, show him the packaging or label.

First-aid measures after eye contact : Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). If eye irritation persists: Get medical advice/attention, If possible show him this sheet. Failing this, show him the packaging or label.

First-aid measures after ingestion : Never attempt to induce vomiting. Give nothing to drink. Get immediate medical advice/attention. If possible show him this sheet. Failing this, show him the packaging or label.

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

No additional information available

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Foam. Powders. Carbon dioxide.

Unsuitable extinguishing media : Water.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Combustible.

Reactivity in case of fire : During combustion : Toxic vapours are released.

5.3. Advice for firefighters

Protection during firefighting : Self-contained breathing apparatus. Complete protective clothing.

Other information : Keep upwind. Evacuate the personnel away from the fumes. In case of significant fire close by : Cool down the containers/equipment exposed to heat with a water spray. Ensure that there is no direct contact between the water and the product. Do not breathe fumes. Do not attempt to take action without suitable protective equipment. Use extinguishing media appropriate for surrounding fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Do not breathe gas. Avoid contact with skin and eyes. Keep people at a distance and stay on the windward side.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

Emergency procedures : Mark out the contaminated area with signs and prevent access to unauthorized personnel.

6.2. Environmental precautions

Dike and contain spill. Do not allow into drains or water courses.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Pump up the product into a suitably labelled spare container. Recover the product with absorbent material. Wash contaminated area with large amounts of water. Recover the cleaning water for later disposal.

Other information : Concerning disposal elimination after cleaning, see section 13.

6.4. Reference to other sections

Refer to protective measures listed in Sections 7 and 8. Concerning disposal elimination after cleaning, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Prevent moisture contact. Avoid any direct contact with the product. Comply with instructions for use (refer to technical sheet). Any measure to eliminate exposure should be considered. Very high level of containment required, except for short term exposures e.g. taking samples (industrial use condition).

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : The floor of the depot should be impermeable and designed to form a water-tight basin.

Storage conditions : Store in a dry place. Store in a closed container. Keep cool. Store container in a well ventilated position. Store in tightly closed packings. Keep/Store away from Incompatible materials.

Storage area : Keep only in the original container. Metallic drums. Storage tank with a dry nitrogen blanket.

Packaging materials : Steel. Aluminium. Unsuitable material for receptacle Copper and its alloys, Tin.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

hexamethylene-di-isocyanate (822-06-0)

EU	IOELV TWA (mg/m ³)	0,075 mg/m ³
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Hexamethylene-di-isocyanate (822-06-0)		
EU	IOELV TWA (ppm)	0,01 ppm
EU	IOELV STEL (mg/m ³)	0,15 mg/m ³
EU	IOELV STEL (ppm)	0,02 ppm
United Kingdom	WEL TWA (mg/m ³)	0,02 mg/m ³
United Kingdom	WEL STEL (mg/m ³)	0,07 mg/m ³
Hexamethylene diisocyanate oligomers (28182-81-2)		
EU	IOELV STEL (mg/m ³)	1 mg/m ³
United Kingdom	WEL STEL (mg/m ³)	1 mg/m ³

Hexamethylene-di-isocyanate (822-06-0)	
DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	0,07 mg/m ³
Acute - local effects, inhalation	0,07 mg/m ³
Long-term - systemic effects, inhalation	0,035 mg/m ³
Long-term - local effects, inhalation	0,035 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	> 77,4 µg/l (Scenedesmus subspicatus)
PNEC aqua (marine water)	> 7,74 µg/L (Scenedesmus subspicatus)
PNEC aqua (intermittent, freshwater)	> 774 µg/L (Scenedesmus subspicatus)
PNEC (Sediment)	
PNEC sediment (freshwater)	> 0,01334 mg/kg dwt (equilibrium partitioning)
PNEC sediment (marine water)	> 0,001334 mg/kg dwt (equilibrium partitioning)
PNEC (Soil)	
PNEC soil	> 0,0026 mg/kg dwt equilibrium partitioning
PNEC (STP)	
PNEC sewage treatment plant	8,42 mg/l (OECD 209)

Hexamethylene diisocyanate oligomers (28182-81-2)	
DNEL/DMEL (Workers)	
Acute - local effects, inhalation	1 mg/m ³
Long-term - local effects, inhalation	0,5 mg/m ³ PNEC (Water)
PNEC aqua (freshwater)	127 µg/l (Daphnia magna)
PNEC aqua (marine water)	12,7 µg/L (Daphnia magna)
PNEC aqua (intermittent, freshwater)	1270 µg/L (Daphnia magna)
PNEC (Sediment)	
PNEC sediment (freshwater)	266,7 g/kg (equilibrium partitioning)
PNEC (Soil)	
PNEC soil	53,2 g/kg (equilibrium partitioning)
PNEC (STP)	
PNEC sewage treatment plant	38,28 mg/l (OECD 209)

8.2. Exposure controls

Appropriate engineering controls	: Ensure good ventilation of the work station. Safety shower. Eye fountain. Do not drink, eat or smoke in the workplace. Keep away from food, drink and animal feeding stuffs. Immediately remove contaminated or damp clothing. Wash hands before breaks and after work. Store protective clothing separately. Always take a shower after work.
Hand protection	: Nitrile-rubber protective gloves. VITON gloves. Protective gloves must be chosen according to the function of the work station: other chemicals which may be handled, physical protection necessary (resistance to cutting, puncture, heat), dexterity required. The selection of gloves must take into account the extent and duration of use at the workstation.
Eye protection	: Safety glasses
Skin and body protection	: Protective clothing
Respiratory protection	: In case of insufficient ventilation, wear suitable respiratory equipment. When using a spray-gun, wear: Self-contained breathing apparatus.



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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: colourless to slightly yellow.
Odour	: odourless.
Odour threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: < -20 °C
Freezing point	: No data available
Boiling point	: > 220 °C (1.33 hPa)
Flash point	: 228 °C Closed cup
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: 1,13 g/cm ³
Solubility	: Reacts with water. Soluble in aromatic hydrocarbons. Completely soluble in ketonic solvents or esters.
Log Pow	: Not applicable
Viscosity, kinematic	: No data available
Viscosity, dynamic	: 600 mPa.s
Explosive properties	: Product is not explosive.
Oxidising properties	: Non oxidizing material according to EC criteria.
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable at room temperature.

10.3. Possibility of hazardous reactions

Reacts with : alcohols. Amines. Bases. Aqueous solution. protic solvents. with a great release of CO₂, and hence a risk of a pressure build-up in confined areas, and forms an insoluble solid precipitate.

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

On combustion or on thermal decomposition (pyrolysis) releases : Carbon oxides (CO, CO₂). Toxic gases. Nitrous gasses.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Inhalation: Harmful if inhaled.
Not harmful by skin contact Not harmful if swallowed

Hexamethylene-di-isocyanate (822-06-0)

LD50 oral rat	959 mg/kg bodyweight (OECD 401)
LD50 dermal rat	> 7000 mg/kg bodyweight (OECD 402)
LC50 inhalation rat (mg/l)	0,124 mg/l/4h (OECD 403)

Hexamethylene diisocyanate oligomers (28182-81-2)

LD50 oral rat	> 2500 mg/kg (OECD 423 (female))
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Hexamethylene diisocyanate oligomers (28182-81-2)	
LD50 dermal rat	> 2000 mg/kg (OECD 402)
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat (mg/l)	0,39 mg/l/4h (OECD 403 (female))

Skin corrosion/irritation	: Not classified (OECD 404 method) rabbit pH: Not applicable
Serious eye damage/irritation	: Not classified (OECD 405 method) rabbit pH: Not applicable
Respiratory or skin sensitisation	: May cause an allergic skin reaction. (OECD 429 method) mouse Is not considered as respiratory sensitizer Guinea-pig

Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified

Hexamethylene-di-isocyanate (822-06-0)	
NOAEC, Chronic, Inhalation, rat,	0.164 ppm ((OECD 453 method))
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: May cause respiratory irritation.

Hexamethylene diisocyanate oligomers (28182-81-2)	
NOAEL (inhalation, rat, vapour)	3 mg/m ³ (6h / OECD TG 403)

Specific target organ toxicity (repeated exposure)	: Not classified
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Hexamethylene-di-isocyanate (822-06-0)	
LOAEL (inhalation, rat, vapour, 90 days)	0,01 ppm (OECD 413)
NOAEC, Chronic, Inhalation, rat,	0.005 ppm (2 years, (OECD 453 method))

Hexamethylene diisocyanate oligomers (28182-81-2)	
NOAEL (inhalation, rat, vapour, 90 days)	3,3 mg/l/6h/day (OECD 413)

Aspiration hazard	: Not classified
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SECTION 12: Ecological information

12.1. Toxicity

Ecology - water	: The product does not have any known adverse effect on the tested aquatic organisms.
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Hexamethylene-di-isocyanate (822-06-0)	
LC50 fish 1	22 mg/l (96 h-static/ Brachydanio rerio)
EC50 other aquatic organisms 1	842 mg/l (3h-static / Bacterie / OECD 209)
ErC50 (algae)	> 77,4 mg/l Desmodesmus subspicatus
LOEC (chronic)	12,6 mg/l (72h / Desmodesmus subspicatus/ EU method C.3)
NOEC (chronic)	11,7 mg/l (72 h /Desmodesmus subspicatus/ EU method C.3)
EC0, daphnia,	≥ 89.1 mg/l (48 Hours, EU C.2)
LC0, Fish,	≥ 82.8 mg/l (96 Hours, EU C.1, (Danio rerio))
EC50, Bacteria,	842 mg/l (3 Hours, (OECD 209 method))

Hexamethylene diisocyanate oligomers (28182-81-2)	
LC50 fish 1	8,9 mg/l (Brachydanio rerio)
EC50 Daphnia 1	127 mg/l (48 h static / EU C.2)
EC50 other aquatic organisms 1	> 1000 mg/l (72h / Scenedesmus subspicatus / DIN 38412)
ErC50 (algae)	> 1000 mg/l (0-72 h static / Desmodesmus subspicatus / EU C.3)
EC50, ACTIVATED SLUDGE,	3828 mg/l (3 Hours, (OECD 209 method))

12.2. Persistence and degradability

XYMERTOL HARDENER 243 (28182-81-2)	
Persistence and degradability	Not readily biodegradable.

hexamethylene-di-isocyanate (822-06-0)	
Biochemical oxygen demand (BOD)	42 % (Bacterie / EU C.4-D)

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Hexamethylene diisocyanate oligomers (28182-81-2)	
Persistence and degradability	Not biodegradable. Biochemical oxygen demand (BOD)
	1 % (bacterie / EU C.4-E)

12.3. Bioaccumulative potential

XYMERTOL HARDENER 243 (28182-81-2)	
Log Pow	Not applicable
Bioaccumulative potential	not bioaccumulable.

Hexamethylene-di-isocyanate (822-06-0)	
BCF fish 1	58 (BCFWIN v2.17)

Hexamethylene diisocyanate oligomers (28182-81-2)	
BCF fish 1	3,2 (BCFWIN v. 2.17)
Bioaccumulative potential	not bioaccumulable.

12.4. Mobility in soil

XYMERTOL HARDENER 243 (28182-81-2)	
Ecology - soil	Formation of insoluble polyurea.

Hexamethylene-di-isocyanate (822-06-0)	
Log Koc	3,77 (PCKOC v1.66)

Hexamethylene diisocyanate oligomers (28182-81-2)	
Log Koc	7,8 (PCKOC v1.66)
Ecology - soil	Ultimate destination of the product : soil and sediment.

12.5. Results of PBT and vPvB assessment

XYMERTOL HARDENER 243 (28182-81-2)	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	

Component	
hexamethylene-di-isocyanate (822-06-0)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

Additional information : Not classified. Dangerous for the environment

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Discharging into rivers and drains is forbidden. Incinerate at a licensed installation.
Additional information : Uncleaned packagings. Contaminated packaging materials must be disposed of in the same manner as the product. Allow it to drain thoroughly. Thoroughly emptied and clean packaging may be recycled. . Disposal must be done according to official regulations.
Ecology - waste materials : Hazardous waste.
European List of Waste (LoW) code : 08 05 01* - waste isocyanates

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA
14.1. UN number		
Not regulated for transport		
14.2. UN proper shipping name		
Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)		
Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable
14.4. Packing group		
Not applicable	Not applicable	Not applicable
14.5. Environmental hazards		
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No
The above regulatory prescriptions are those valid on the date of publication of this sheet, However, considering the always possible evolution of transport regulations for hazardous materials, in the case where the SDS in your possession is dating back over 12 months, it would be advisable to check their validity with your commercial agency		

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14.6. Special precautions for user

- Overland transport

No data available

- Transport by sea

No data available

- Air transport

No data available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Xymertol 243 is not on the REACH Candidate List Contains

no substance on the REACH candidate list Xymertol Hardener 243 is not on the REACH Annex XIV List

Contains no REACH Annex XIV substances

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

For this substance a chemical safety assessment has been carried out

SECTION 16: Other information

Other information

: The product is used mainly as a hardener in coating materials or adhesives. The handling of coating materials or adhesives containing reactive polyisocyanates and residual monomeric HDI requires appropriate protective measures referred to in this safety data sheet. These products may therefore be used only in industrial or trade applications. They are not suitable for use in homemaker (Do It Yourself) applications.

Full text of H- and EUH-statements:

Acute Tox. 1 (Inhalation:vapour)	Acute toxicity (inhalation:vapour) Category 1
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Resp. Sens. 1	Sensitisation — Respiratory, category 1
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Sensitisation — Skin, category 1
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H302	Harmful if swallowed
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H330	Fatal if inhaled
H332	Harmful if inhaled
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335	May cause respiratory irritation

SDS EU (REACH Annex II)

This Safety Data Sheet is not a Product Specification. It is based on our present knowledge and experience and it is intended to serve as a guide for safe handling of the product regarding to health and environmental aspects