ARALDITE® 2011 GB HARDENER

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

1.1 Product identifier

Trade name : ARALDITE® 2011 GB HARDENER

Unique Formula Identifier (UFI) : ETE2-200N-1009-XXE9

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

Use of the Substance/Mixture : Hardener

1.3 Details of the supplier of the safety data sheet

Company : Huntsman Advanced Materials (Europe) BV
Address : Grijpenlaan 18
3300 Tienen
Belgium
Telephone : +41 61 299 20 41
Telefax : +41 61 299 20 40

E-mail address of person responsible for the SDS : Global_Product_EHS_AdMat@huntsman.com

1.4 Emergency telephone

Emergency telephone : Berlin: 0049 30 19 24 0 & 0049 30 30 68 6 7 11
Bonn: 0049 228 19 27 0 & 0049 228 28 7 3 32 11
Erfurt: 0049 361 73 07 30
Freiburg: 0049 761 16 24 0
Göttingen: 0049 51 19 24 0 & 0049 551 38 31 80
Homburg: 0049 6841 19 24 0
Mainz: 0049 6131 19 24 0 & 0049 6131 23 24 66
München: 0049 89 19 24 0
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France ORFILA: +33(0)145425959
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China: +86 20 39377888
+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1 800-424-9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin corrosion, Sub-category 1C H314: Causes severe skin burns and eye damage.

Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.

2.2 Label elements

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal Word : Danger

Hazard Statements :

H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.

Precautionary Statements :

Prevention:

P261	Avoid breathing mist or vapors.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
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/ doctor.

Hazardous ingredients which must be listed on the label:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine
Amines, polyethylenepoly-, triethylenetetramine fraction

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : Polyamines

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8 234-148-4 01-2119970376-29	Acute Tox. 4; H302 Skin Corr. 1A; H314 Eye Dam. 1; H318 Skin Sens. 1B; H317 specific concentration limit Skin Corr. 1A; H314 >= 29,85 % Skin Corr. 1B; H314 9,65 - < 29,85 % Skin Corr. 1C; H314 5 - < 9,65 %	>= 5 - < 9,65
Amines, polyethylenepoly-, triethylenetetramine fraction	90640-67-8 292-588-2 01-2119487919-13	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1; H317 Aquatic Chronic 3; H412 EUH071	>= 3 - < 5

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice : Move out of dangerous area.
Consult a physician.
Show this material safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur.

Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Avoid inhalation, ingestion and contact with skin and eyes.
No action shall be taken involving any personal risk or without

suitable training.
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.

In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

Risks : May cause an allergic skin reaction.
Causes serious eye damage.
Causes severe burns.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical

Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire

5.2 Special hazards arising from the substance or mixture

Specific hazards during : Do not allow run-off from fire fighting to enter drains or water

firefighting		courses.
Hazardous combustion products	:	No hazardous combustion products are known

5.3 Advice for firefighters

Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Specific extinguishing methods	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Neutralize with acid. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal considerations see section 13., See Section 1 for emergency contact information., For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use.

Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Keep in properly labeled containers.

Advice on common storage : Do not store near acids.

Storage class (TRGS 510) : 8A

Further information on storage stability : Stable under normal conditions.

Recommended storage temperature : 2 - 40 °C

7.3 Specific end use(s)

Specific use(s) : No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006

Substance name	End Use	Exposure routes	Potential health effects	Value
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	Workers	Inhalation	Long-term systemic effects	3,7 mg/m3
	Workers	Inhalation	Acute systemic effects	7,5 mg/m3
	Workers	Inhalation	Long-term local effects	3,7 mg/m3
	Workers	Inhalation	Acute local effects	7,5 mg/m3
	Workers	Dermal	Long-term systemic effects	0,67 mg/kg

	Consumers	Inhalation	Long-term systemic effects	0,65 mg/m3
	Consumers	Inhalation	Long-term local effects	0,65 mg/m3
	Consumers	Oral	Long-term systemic effects	0,2 mg/kg
Amines, polyethylenepoly-, triethylenetetramine fraction	Workers	Inhalation	Long-term systemic effects	0,54 mg/m3
	Consumers	Inhalation	Long-term systemic effects	0,096 mg/m3
	Consumers	Oral	Long-term systemic effects	14 mg/kg bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006

Substance name	Environmental Compartment	Value
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	Fresh water	9,2 µg/l
	Remarks:Assessment Factors	
	Sea water	0,92 µg/l
	Remarks:Assessment Factors	
	Freshwater - intermittent	92 µg/l
	Remarks:Assessment Factors	
	Sewage treatment plant	18,1 mg/l
	Remarks:Assessment Factors	
	Fresh water sediment	0,0641 mg/kg dry weight (d.w.)
	Sea sediment	0,000006 mg/kg dry weight (d.w.)
	Soil	0,0074 mg/kg dry weight (d.w.)
Amines, polyethylenepoly-, triethylenetetramine fraction	Fresh water	0,027 mg/l
	Sea water	0,003 mg/l
	Sewage treatment plant	0,13 mg/l
	Fresh water sediment	8,572 mg/kg dry weight (d.w.)
	Sea sediment	0,857 mg/kg dry weight (d.w.)
	Soil	1,25 mg/kg dry weight (d.w.)

8.2 Exposure controls

Personal protective equipment

Eye/face protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Hand protection
Material : butyl-rubber
Break through time : > 8 h

Material : Nitrile rubber

Break through time	:	10 - 480 min
Material	:	Ethyl Vinyl Alcohol Laminate (EVAL)
Break through time	:	> 8 h
Remarks	:	Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.
Skin and body protection	:	Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Respiratory protection	:	Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines Equipment should conform to EN 14387
Filter type	:	Combined particulates, inorganic and acidic gas/vapor, ammonia/amines and organic vapor type (ABEK-P)

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Form	:	No data is available on the product itself.
Color	:	light yellow
Odor	:	slight
Odor Threshold	:	No data is available on the product itself.
Melting point	:	No data available
Boiling point	:	> 200 °C
Flammability	:	No data is available on the product itself.
Lower explosion limit / Lower flammability limit	:	No data is available on the product itself.
Upper explosion limit / Upper flammability limit	:	No data is available on the product itself.
Flash point	:	110 °C Method: Pensky-Martens closed cup
Autoignition temperature	:	No data is available on the product itself.

Decomposition temperature	:	> 200 °C
pH	:	11 Concentration: 50 %
Viscosity		
Viscosity, dynamic	:	20 000 - 35 000 mPa.s (25 °C)
Solubility(ies)		
Water solubility	:	practically insoluble (20 °C)
Solubility in other solvents	:	No data is available on the product itself.
Partition coefficient: n-octanol/water	:	No data is available on the product itself.
Vapor pressure	:	0,04 hPa (20 °C)
Density	:	0,95 g/cm3 (25 °C)
Relative density	:	No data is available on the product itself.
Relative vapor density	:	No data is available on the product itself.
Particle characteristics	:	No data is available on the product itself.

9.2 Other information

Molecular weight	:	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	No hazards to be specially mentioned.

10.4 Conditions to avoid

Conditions to avoid	:	None known.

10.5 Incompatible materials

Materials to avoid	:	None known.

10.6 Hazardous decomposition products

No hazardous decomposition products are known.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity : Acute toxicity estimate: > 2 000 mg/kg
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 2 000 mg/kg
Method: Calculation method

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Acute oral toxicity : LD50 (Rat, male and female): 1 669 mg/kg
Method: OECD Test Guideline 401
GLP: no
Assessment: The component/mixture is moderately toxic after single ingestion.

Amines, polyethylenepoly-, triethylenetetramine fraction:

Acute oral toxicity : LD50 (Rat, male and female): 1 716,2 mg/kg
Method: OECD Test Guideline 401
Assessment: The component/mixture is moderately toxic after single ingestion.

Acute inhalation toxicity : Assessment: Corrosive to the respiratory tract.

Acute dermal toxicity : LD50 (Rabbit, male and female): 1 465,4 mg/kg
Method: OECD Test Guideline 402
Assessment: The component/mixture is moderately toxic after single contact with skin.

Skin corrosion/irritation

Causes severe burns.

Product:

Result : Corrosive after 1 to 4 hours of exposure

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species : Rabbit
Assessment : Causes severe burns.
Method : OECD Test Guideline 404
Result : Extremely corrosive and destructive to tissue.
GLP : yes

Amines, polyethylenepoly-, triethylenetetramine fraction:

Species	:	reconstructed human epidermis (RhE)
Assessment	:	Causes burns.
Method	:	OECD Test Guideline 435
Result	:	Corrosive after 3 minutes to 1 hour of exposure

Species	:	Rabbit
Assessment	:	Causes burns.
Method	:	OECD Test Guideline 404
Result	:	Corrosive after 3 minutes to 1 hour of exposure

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Species	:	Rabbit
Assessment	:	Corrosive
Result	:	Corrosive

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Assessment	:	Risk of serious damage to eyes.
Result	:	Risk of serious damage to eyes.
GLP	:	no

Amines, polyethylenepoly-, triethylenetetramine fraction:

Species	:	Rabbit
Assessment	:	Risk of serious damage to eyes.
Method	:	OECD Test Guideline 405
Result	:	Irreversible effects on the eye

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified due to lack of data.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Test Type	:	Maximisation Test
Exposure routes	:	Skin
Species	:	Guinea pig
Assessment	:	Probability or evidence of low to moderate skin sensitisation rate in humans
Method	:	OECD Test Guideline 406
Result	:	Probability or evidence of low to moderate skin sensitisation rate in humans
GLP	:	yes

Amines, polyethylenepoly-, triethylenetetramine fraction:

Exposure routes	:	Skin
Species	:	Guinea pig
Assessment	:	Probability or evidence of skin sensitisation in humans
Method	:	OECD Test Guideline 406
Result	:	Probability or evidence of skin sensitisation in humans

Germ cell mutagenicity

Not classified due to lack of data.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative
GLP: yes

Test Type: reverse mutation assay
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Test Type: reverse mutation assay
Test system: Salmonella tryphimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Amines, polyethylenepoly-, triethylenetetramine fraction:

Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella tryphimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive
GLP: yes

Test Type: Micronucleus test
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test

Species: Mouse (male and female)
Cell type: Bone marrow
Application Route: Intraperitoneal injection
Dose: 0 - 600 mg/kg
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity

Not classified due to lack of data.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species	:	Mouse, male
Application Route	:	Dermal
Exposure time	:	20 month(s)
Dose	:	1.25/56.3 mg/animal
Frequency of Treatment	:	3 daily
NOAEL	:	>= 56,3 mg/kg body weight
Result	:	negative
Remarks	:	Information given is based on data obtained from similar substances.

Amines, polyethylenepoly-, triethylenetetramine fraction:

Species	:	Mouse, male
Application Route	:	Dermal
NOAEL	:	>= 50 mg/kg bw/day
Method	:	OECD Test Guideline 451
Result	:	negative

Species	:	Mouse, male
Application Route	:	Dermal
Exposure time	:	104 weeks
NOAEL	:	>= 20 mg/kg bw/day
Method	:	OECD Test Guideline 451
Result	:	negative

Reproductive toxicity

Not classified due to lack of data.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Effects on fertility	:	Test Type: Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test Species: Rat, male and female Application Route: Oral Dose: 5, 15 and 50 mg/kg bw/d General Toxicity Parent: NOAEL: 15 mg/kg body weight General Toxicity F1: NOAEL: 15 mg/kg body weight Method: OECD Test Guideline 422 Result: Animal testing did not show any effects on fertility. GLP: yes

Test Type: Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test
Species: Rat, male and female
Application Route: Oral
Dose: 0, 100, 200 and 400 milligram per kilogram
Frequency of Treatment: 7 days/week
General Toxicity Parent: NOAEL: > 400 mg/kg body weight
General Toxicity F1: NOAEL: 400 mg/kg body weight
Method: OECD Test Guideline 422

Effects on fetal development : Test Type: reproductive and developmental toxicity study
Species: Rat, male and female
Application Route: Oral
Dose: 5, 15 and 50 mg/kg bw/d
General Toxicity Maternal: NOAEL: 15 mg/kg body weight
Developmental Toxicity: NOAEL: 15 mg/kg body weight
Method: OECD Test Guideline 422
Result: Not classified
GLP: yes
Remarks: Information given is based on data obtained from similar substances.

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

Amines, polyethylenepoly-, triethylenetetramine fraction:

Effects on fetal development : Test Type: Pre-natal
Species: Rat
Application Route: Oral
Dose: 75/325/750 mg/kg bw/day
Duration of Single Treatment: 10 d
General Toxicity Maternal: NOAEL: >= 750 mg/kg body weight
Developmental Toxicity: NOAEL: >= 750 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rabbit
Application Route: Dermal
Dose: 5/50/125 mg/kg bw/day
Duration of Single Treatment: 13 d
General Toxicity Maternal: NOAEL: 50 mg/kg body weight
Developmental Toxicity: NOAEL: >= 125 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Reproductive toxicity - Assessment : The reprotoxic effects of Triethylenetetramine (TETA) are under further evaluation as part of the EU REACH program due in part to the aminoethyl ethanolamine (AEEA) content.

STOT-single exposure

Not classified due to lack of data.

STOT-repeated exposure

Not classified due to lack of data.

Repeated dose toxicity

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species	:	Rat, male and female
	:	500 mg/m3
Application Route	:	Inhalation
Test atmosphere	:	vapor
Exposure time	:	21 d 6 h
Number of exposures	:	5 days/week
Dose	:	550 mg/m3
Method	:	Subchronic toxicity
Remarks	:	Based on data from similar materials

Species	:	Mouse, male
NOAEL	:	>= 56,3 mg/kg/d
Application Route	:	Skin contact
Number of exposures	:	3 d
Method	:	Chronic toxicity
Remarks	:	Based on data from similar materials

Species	:	Rat, male and female
NOAEL	:	41 mg/kg
NOAEL	:	1 000 mg/l, ppm
Application Route	:	oral (feed)
Exposure time	:	20 months
Number of exposures	:	3 times/week
Dose	:	1000/7500/15000 ppm
Method	:	OECD Test Guideline 408

Species	:	Rat, male and female
NOAEL	:	200 mg/kg
Application Route	:	Oral
Exposure time	:	51 d
Number of exposures	:	7 days/week
Dose	:	0, 100, 200 mg/kg bw/day
Method	:	OECD Test Guideline 422

Amines, polyethylenepoly-, triethylenetetramine fraction:

Species	:	Rat, male and female
NOAEL	:	350 mg/kg
Application Route	:	Oral
Exposure time	:	28 d
Number of exposures	:	7 d
Dose	:	100/350/1000 mg/kg bw/day
Method	:	OECD Test Guideline 407
Target Organs	:	Lungs
Remarks	:	Information given is based on data obtained from similar substances.

Species	:	Dog, male and female

NOAEL	:	125 mg/kg
Application Route	:	Oral
Target Organs	:	Lungs
Remarks	:	Information given is based on data obtained from similar substances.

Species	:	Dog, male and female
NOAEL	:	50 mg/kg
Application Route	:	Oral
Method	:	Subchronic toxicity
Remarks	:	Information given is based on data obtained from similar substances.

Species	:	Rat, male and female
NOAEL	:	50 mg/kg
Application Route	:	Oral
Exposure time	:	26 weeks
Dose	:	50/175/600 mg/kg bw/day
Method	:	OECD Test Guideline 408
Target Organs	:	Lungs
Remarks	:	Information given is based on data obtained from similar substances.

Species	:	Mouse, male and female
NOAEL	:	92 mg/kg, 600 ppm
Application Route	:	Oral
Exposure time	:	120/600/3000 ppm
Method	:	OECD Test Guideline 408
Remarks	:	Information given is based on data obtained from similar substances.

Aspiration toxicity

Not classified due to lack of data.

11.2 Information on other hazards

Endocrine disrupting properties

Not classified due to lack of data.

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 9,2 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

NOEC (Selenastrum capricornutum (green algae)): 5,7 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

Toxicity to microorganisms : EC50 (Pseudomonas putida): 181 mg/l
Exposure time: 16 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: DIN 38 412 Part 8
GLP: no

Amines, polyethylenepoly-, triethylenetetramine fraction:

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 570 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water

Method: Directive 67/548/EEC, Annex V, C.1.

LC50 (Leuciscus idus (Golden orfe)): 200 - 500 mg/l
Exposure time: 96 h

LC50 (Pimephales promelas (fathead minnow)): 330 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: Fish Acute Toxicity Test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 31,1 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 20 mg/l
Exposure time: 72 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 201

EC10 (Selenastrum capricornutum (green algae)): 1,34 mg/l
Exposure time: 72 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC (Bacteria): >= 100 mg/l
Exposure time: 28 d
Method: OECD Test Guideline 216

EC50 (Bacteria): > 100 mg/l
Exposure time: 28 h
Method: OECD Test Guideline 216

EC50 (Bacteria): 15,7 mg/l
Exposure time: 2 h
Test Type: static test
Test substance: Fresh water

NOEC (Bacteria): 1,3 mg/l
Exposure time: 2 h
Test Type: static test
Test substance: Fresh water

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10: 1,9 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to soil dwelling organisms	:	NOEC: ca. 62,5 mg/kg Exposure time: 56 d Species: Eisenia fetida (earthworms) Method: OECD Test Guideline 222 EC50: > 1 000 mg/kg Exposure time: 56 d Species: Eisenia fetida (earthworms) Method: OECD Test Guideline 222

Ecotoxicology Assessment

Chronic aquatic toxicity	:	Harmful to aquatic life with long lasting effects.

12.2 Persistence and degradability

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Biodegradability	:	Test Type: aerobic Result: Readily biodegradable. Biodegradation: 100 % Related to: Dissolved organic carbon (DOC) Exposure time: 28 d Method: OECD Test Guideline 301A Test substance: Fresh water GLP: yes

Amines, polyethylenepoly-, triethylenetetramine fraction:

Biodegradability	:	Inoculum: activated sludge Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 162 d Method: OECD Test Guideline 301D Test substance: Fresh water Test Type: aerobic Inoculum: activated sludge Result: Not inherently biodegradable. Biodegradation: 20 % Related to: Dissolved organic carbon (DOC) Exposure time: 84 d Method: OECD Test Guideline 302A Test substance: Fresh water

12.3 Bioaccumulative potential

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Partition coefficient: n-octanol/water	:	log Pow: -0,56 (25 °C) pH: 11,6 Method: OECD Test Guideline 107

Amines, polyethylenepoly-, triethylenetetramine fraction:

Partition coefficient: n-octanol/water	:	log Pow: -2,08 - 2,90 (20 °C) Method: QSAR

12.4 Mobility in soil

Components:

Amines, polyethylenepoly-, triethylenetetramine fraction:

Distribution among environmental compartments	:	Koc: 3162,28, log Koc: 3,5 Method: OECD Test Guideline 106

12.5 Results of PBT and vPvB assessment

Based on available data, the classification criteria are not met.

12.6 Endocrine disrupting properties

Based on available data, the classification criteria are not met.

12.7 Other adverse effects

Product:

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life.

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Assessment	:	Not persistent, mobile, and toxic (PMT). Not very persistent and very mobile (vPvM).

Amines, polyethylenepoly-, triethylenetetramine fraction:

Assessment	:	Not persistent, mobile, and toxic (PMT). Not very persistent and very mobile (vPvM).

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	Dispose of contents and container in accordance with all local, regional, national and international regulations. Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

14.1 UN number or ID number

ADN	:	UN 2735
ADR	:	UN 2735
RID	:	UN 2735
IMDG	:	UN 2735
IATA	:	UN 2735

14.2 UN proper shipping name

ADN	:	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIMETHYL DIPROPYL TRIAMINE, TRIETHYLENE TETRAMINE)
ADR	:	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIMETHYL DIPROPYL TRIAMINE, TRIETHYLENE TETRAMINE)
RID	:	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIMETHYL DIPROPYL TRIAMINE, TRIETHYLENE TETRAMINE)
IMDG	:	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIMETHYL DIPROPYL TRIAMINE, TRIETHYLENE TETRAMINE)
IATA	:	Polyamines, liquid, corrosive, n.o.s. (DIMETHYL DIPROPYL TRIAMINE, TRIETHYLENE TETRAMINE)

14.3 Transport hazard class(es)

		Class	Subsidiary risks
ADN	:	8	
ADR	:	8	
RID	:	8	
IMDG	:	8	
IATA	:	8	

14.4 Packing group

ADN

Packing group	:	III
Classification Code	:	C7
Hazard Identification Number	:	80
Labels	:	8

ADR

Packing group	:	III
Classification Code	:	C7
Hazard Identification Number	:	80
Labels	:	8
Tunnel restriction code	:	(E)

RID

Packing group	:	III
Classification Code	:	C7

Hazard Identification Number : 80
Labels : 8

IMDG
Packing group : III
Labels : 8
EmS Code : F-A, S-B

IATA (Cargo)
Packing instruction (cargo aircraft) : 856
Packing instruction (LQ) : Y841
Packing group : III
Labels : Corrosive

IATA (Passenger)
Packing instruction (passenger aircraft) : 852
Packing instruction (LQ) : Y841
Packing group : III
Labels : Corrosive

14.5 Environmental hazards

ADN
Environmentally hazardous : no

ADR
Environmentally hazardous : no

RID
Environmentally hazardous : no

IMDG
Marine pollutant : no

14.6 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.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorization (Article 59). : This product does not contain substances of very high concern.

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Conditions of restriction for the following entries should be considered:
Number on list 3

Number on list 75: If you intend to use this product as tattoo ink, please contact your vendor.

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	Not applicable

Water hazard class (Germany) : WGK 1 slightly hazardous to water
Classification according to AwSV, Annex 1 (5.2)

Other regulations:

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

15.2 Chemical Safety Assessment

Chemical Safety Assessments for all substances in this product are either Complete or Not applicable.

SECTION 16: Other information

Full text of H-Statements

H302	:	Harmful if swallowed.
H312	:	Harmful in contact with skin.
H314	:	Causes severe skin burns and eye damage.
H317	:	May cause an allergic skin reaction.
H318	:	Causes serious eye damage.
H412	:	Harmful to aquatic life with long lasting effects.
EUH071	:	Corrosive to the respiratory tract.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Eye Dam.	:	Serious eye damage
Skin Corr.	:	Skin corrosion
Skin Sens.	:	Skin sensitisation

Further information

Classification of the mixture:		**Classification procedure:**
Skin Corr. 1C	H314	Based on product data or assessment
Eye Dam. 1	H318	Based on product data or assessment
Skin Sens. 1	H317	Calculation method

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IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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