

ARALDITE® 2014-2 HARDENER

Version Revision Date: SDS Number: Date of last issue: -

1.0 22.11.2017 400001014968 Date of first issue: 22.11.2017

SECTION 1: Identification of the hazardous chemical and of the supplier

Product identifier

Product name : ARALDITE® 2014-2 HARDENER

Recommended use of the chemical and restrictions on use

Recommended use : Adhesives

Manufacturer or supplier's details

Company : Huntsman Advanced Materials (Singapore) Pte Ltd.

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189720

Singapore

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SECTION 2: Hazards identification

Classification of the hazardous chemical

Skin corrosion/irritation : Category 2

Serious eye damage/eye

irritation

: Category 1

Skin sensitisation : Category 1

Acute aquatic toxicity : Category 2



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Hazardous to the aquatic environment - chronic hazard

: Category 2

Label elements

Hazard pictograms







Signal word : Danger

Hazard statements : H315 Causes skin irritation.

H317 May cause an allergic skin reaction. H318 Causes serious eye damage.

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention**:

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

P264 Wash skin thoroughly after handling.

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.

Response:

P391 Collect spillage.

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

P362 + P364 Take off contaminated clothing and wash it before

reuse.

P333 + P313 If skin irritation or rash occurs: Get medical

advice/ attention.

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.

Storage:

Store in accordance with all local, regional, national and

international regulations.

Disposal:

P501 Dispose of contents and container in accordance with all

local, regional, national and international regulations.

Other hazards which do not result in classification

None known.

SECTION 3: Composition and information of the ingredients of the hazardous chemical

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine	68154-62-1	>= 13 - < 30
2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine	25513-64-8	>= 3 - < 13



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Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine	68154-62-1	>= 3 - < 7
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8	>= 3 - < 7
trientine	112-24-3	>= 1 - < 3

SECTION 4: First aid measures

If inhaled : Move to fresh air.

Keep patient warm and at rest. If symptoms persist, call a physician.

In case of skin contact : Take off contaminated clothing and shoes immediately.

Wash off with soap and plenty of water. If symptoms persist, call a physician.

In case of eye contact : Immediately flush eye(s) with plenty of water.

Remove contact lenses. Seek medical advice.

If swallowed : Rinse mouth with water.

Do NOT induce vomiting.

Consult a physician if necessary.

Most important symptoms and effects, both acute and

delayed

: None known.

Notes to physician : No information available.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media : Use extinguishing measures that are appropriate to local

circumstances and the surrounding environment.

Unsuitable extinguishing

media

None known.

Physicochemical hazards arising from the chemical

Specific hazards during

firefighting

Do not use a solid water stream as it may scatter and spread

fire

Do not allow run-off from fire fighting to enter drains or water

courses.

Special protective equipment and precautions for fire-fighters

Special protective equipment

for firefighters

: In the event of fire, wear self-contained breathing apparatus.



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Specific extinguishing

methods

: 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.

Hazchem Code : •3Z

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.

Ensure adequate ventilation.

Environmental precautions : Prevent product from entering drains.

Do not allow contact with soil, surface or ground water.

Methods and materials for containment and cleaning up

: Soak up with inert absorbent material (e.g. sand, silica gel,

acid binder, universal binder, sawdust).

Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Handling

Precautions for safe handling

Technical measures : Ensure that eyewash stations and safety showers are close to

the workstation location.

Local/Total ventilation : Ensure adequate ventilation.

Advice on protection against

fire and explosion

Normal measures for preventive fire protection.

Advice on safe handling : Avoid contact with skin and eyes.

For personal protection see section 8.

Smoking, eating and drinking should be prohibited in the

application area.

Dispose of rinse water in accordance with local and national

regulations.

Storage

Conditions for safe storage, including any incompatibilities

Conditions for safe storage : Keep of

Keep containers tightly closed in a cool, well-ventilated place.
 Containers which are opened must be carefully resealed and

kept upright to prevent leakage.

Further information on

storage stability

No decomposition if stored and applied as directed.

SECTION 8: Exposure controls and personal protection

Control parameters



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Contains no substances with occupational exposure limit values.

Individual protection measures, such as personal protective equipment

Eye/face protection : Safety glasses

Skin protection : Protective suit

Hand protection

Material : butyl-rubber

Material : Ethyl Vinyl Alcohol Laminate (EVAL)

Break through time : > 8 h

Material : Nitrile rubber Break through time : 10 - 480 min

Remarks : The suitability for a specific workplace should be discussed

with the producers of the protective gloves. 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).

Respiratory protection : Use respiratory protection unless adequate local exhaust

ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines

Recommended Filter type:

Combined particulates and organic vapour type

Filter type : Filter type A-P

Hygiene measures : Handle in accordance with good industrial hygiene and safety

practice.

When using do not eat, drink or smoke.

Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties

Appearance : paste

Colour : black

Odour : amine-like

Odour Threshold : No data is available on the product itself.

pH : No data is available on the product itself.

Melting point/freezing point : No data available

Boiling point : $> 200 \, ^{\circ}\text{C}$



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Flash point : $> 100 \, ^{\circ}\text{C}$

Method: closed cup

Evaporation rate : No data is available on the product itself.

Flammability (solid, gas) : No data is available on the product itself.

Flammability (liquids) : No data is available on the product itself.

Upper explosion limit / Upper

flammability limit

: No data is available on the product itself.

Lower explosion limit / Lower

flammability limit

: No data is available on the product itself.

Vapour pressure : 0.001 hPa

Relative vapour density : No data is available on the product itself.

Relative density : No data is available on the product itself.

Density : ca. 1.6 g/cm3

Solubility(ies)

Water solubility : 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.

Auto-ignition temperature : > 200 °C

Decomposition temperature : > 200 °C

Self-Accelerating

decomposition temperature

(SADT)

: No data is available on the product itself.

Viscosity

Viscosity, dynamic : 75 - 150 Pas (20 °C)

Method: DIN Method, other

Explosive properties : No data is available on the product itself.

Oxidizing properties : No data is available on the product itself.

Molecular weight : No data available

Particle size : No data is available on the product itself.

SECTION 10: Stability and reactivity

Reactivity : Stable under recommended storage conditions. Chemical stability : No decomposition if stored and applied as directed.

Possibility of hazardous : Stable under normal conditions.



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reactions

Conditions to avoid : None known.

Incompatible materials : Strong acids and strong bases

Strong oxidizing agents

Hazardous decomposition

products

Carbon oxides

Nitrogen oxides (NOx)

Burning produces noxious and toxic fumes.

SECTION 11: Toxicological information

Information on likely routes of : None known.

exposure

Acute toxicity

Acute oral toxicity - Product : Acute toxicity estimate : > 2,000 mg/kg

Method: Calculation method

Acute inhalation toxicity : No data available

Acute dermal toxicity -

Product

: Acute toxicity estimate : > 2,000 mg/kg

Method: Calculation method

Acute toxicity (other routes of : No data available

administration)

Skin corrosion/irritation

Product:

Species: reconstructed human epidermis (RhE)

Assessment: Irritating to skin. Method: OECD Test Guideline 435

Result: Non-corrosive

Serious eye damage/eye irritation

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Species: Bovine cornea Result: Non-corrosive Exposure time: 10 min

Method: OECD Test Guideline 437

Species: Rabbit

Result: Irreversible effects on the eye

Exposure time: 21 d

Method: OECD Test Guideline 405

Remarks: Information given is based on data obtained from similar substances.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Species: Rabbit



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Result: Corrosive

Method: OECD Test Guideline 405

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Assessment: Irritating to eyes.

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

Result: Corrosive

Assessment: Severe eye irritation

trientine:

Species: Rabbit Result: Corrosive Assessment: Corrosive

Method: OECD Test Guideline 404

Respiratory or skin sensitisation

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Test Type: Local lymph node assay (LLNA)

Exposure routes: Dermal

Species: CBA/Ca

Method: OECD Test Guideline 429

Result: May cause sensitisation by skin contact.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Exposure routes: Skin Species: Guinea pig

Method: OECD Test Guideline 406

Result: The product is a skin sensitiser, sub-category 1A.

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Assessment: May cause sensitisation by skin contact.

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

Exposure routes: Skin Species: Guinea pig

Method: OECD Test Guideline 406

Result: The product is a skin sensitiser, sub-category 1B.

trientine:

Exposure routes: Skin Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

Assessment: No data available

Germ cell mutagenicity

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Genotoxicity in vitro : Test Type: Ames test

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471



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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

Remarks: Information given is based on data obtained from

similar substances.

Test Type: in vitro assay

Test system: Human lymphocytes

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 487

Result: negative

Remarks: Information given is based on data obtained from

similar substances.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Genotoxicity in vitro : Test Type: Ames test

Test system: Salmonella typhimurium

Concentration: 5000 ug/plate

Metabolic activation: with and without metabolic activation

Method: Directive 67/548/EEC, Annex, B.13/14

Result: negative

Test Type: Chromosome aberration test in vitro Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Concentration: 2 mg/ml

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

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

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 487

Result: negative

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

trientine:

Genotoxicity in vitro : Concentration: 0 - 200 μg/L

Metabolic activation: negative Method: OECD Test Guideline 482



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Result: negative

Components:

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Genotoxicity in vivo : Species: Chinese hamster (male and female)

Cell type: Bone marrow Application Route: Oral Dose: 825 - 1000 mg/kg

Method: OECD Test Guideline 474

Result: negative

Test Type: In vivo micronucleus test Species: Mouse (male and female)

Application Route: Oral Dose: 850 - 1000 mg/kg

Method: OECD Test Guideline 474

Result: negative

trientine:

Genotoxicity in vivo : Application Route: Intraperitoneal injection

Dose: 0 - 600 mg/kg

Method: OECD Test Guideline 474

Result: negative

Carcinogenicity

Components:

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

Species: Mouse, (male)
Application Route: Dermal
Exposure time: 20 month(s)
Frequency of Treatment: 3 daily

Result: negative

trientine:

Species: Mouse, (male) Application Route: Dermal

Dose: 42 mg/kg

Frequency of Treatment: 3 daily Method: OECD Test Guideline 451

Result: negative

Carcinogenicity - : No data available

Assessment

Reproductive toxicity

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

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

Fertility: No observed adverse effect level: 1,000 mg/kg body

weight



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Early Embryonic Development: No observed adverse effect

level: 1,000 mg/kg body weight Method: OECD Test Guideline 422

Result: No effects on fertility and early embryonic

development were detected.

Remarks: Information given is based on data obtained from

similar substances.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Species: Rat, male and female

Application Route: Oral

Dose: 10, 60, 120 mg/kg bw/day Method: OECD Test Guideline 416

Result: No effects on fertility and early embryonic

development were detected.

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

Species: Rat, male and female

Application Route: Oral

Method: OECD Test Guideline 422

Result: Animal testing did not show any effects on fertility.

Components:

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Effects on foetal : Species: Rabbit, female development : Application Route: Oral

General Toxicity Maternal: No observed adverse effect level:

50,000 ppm

Result: No teratogenic effects

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

Species: Rat, male and female

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level:

15 mg/kg body weight

Developmental Toxicity: No observed adverse effect level: 15

mg/kg body weight

Embryo-foetal toxicity: No observed adverse effect level: 15

mg/kg body weight

Method: OECD Test Guideline 422

Result: No effects on fertility and early embryonic

development were detected.

trientine:

Species: Rat

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level:

> 750 mg/kg body weight

Method: OECD Test Guideline 414 Result: No teratogenic effects

Species: Rabbit

Application Route: Dermal

General Toxicity Maternal: No observed adverse effect level:

125 mg/kg body weight

Method: OECD Test Guideline 414



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Result: No teratogenic effects

Components:

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

Reproductive toxicity - : No evidence of adverse effects on sexual function and fertility,

Assessment or on development, based on animal experiments.

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Repeated dose toxicity

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Species: Rat, male and female

NOAEL: 1,000 mg/kg

Application Route: oral (gavage) Dose: 100, 300, 1000 mg/kg/d Method: OECD Test Guideline 422

Remarks: Information given is based on data obtained from similar substances.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Species: Rat, male and female NOAEL: 10 mg/kg bw/day Application Route: Ingestion Exposure time: 13 Weeks Number of exposures: Daily Dose: 10, 60, 180mg/kg bw Target Organs: Liver

Species: Rat, male and female LOAEL: 60 mg/kg bw/day Application Route: Ingestion Exposure time: 13 Weeks Number of exposures: Daily Dose: 10, 60, 180mg/kg bw Target Organs: Liver

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

Species: Rat, male and female

NOEC: 550 ppm

Application Route: Ingestion Test atmosphere: vapour Exposure time: 3 Weeks Number of exposures: 7 d Method: Subchronic toxicity

Species: Mouse, male NOAEL: >= 56.3 mg/kg/d



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Application Route: Skin contact

Exposure time: 20 h Number of exposures: 3 d Method: Chronic toxicity

trientine:

Species: Rat, male and female

NOAEL: 50 mg/kg

Application Route: Ingestion Exposure time: 26 Weeks Number of exposures: 7 d Method: Subchronic toxicity

Repeated dose toxicity -

Assessment

: No data available

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Ingestion: No data available



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SECTION 12: Ecological information

Ecotoxicity

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 7.07 mg/l

> End point: mortality Exposure time: 96 h Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 203

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 174 mg/l

> Exposure time: 48 h Method: DIN 38412

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

: LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l Toxicity to fish

> Exposure time: 96 h Test Type: static test Test substance: Fresh water

Method: OECD Test Guideline 203

trientine:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 330 mg/l

Exposure time: 96 h Test Type: static test

Test substance: Fresh water Method: Fish Acute Toxicity Test

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine: Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 5.18 mg/l

End point: Immobilization aquatic invertebrates

Exposure time: 48 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 31.5 mg/l aquatic invertebrates

Exposure time: 24 h Method: DIN 38412

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

: EC50 (Daphnia magna (Water flea)): 9.2 mg/l Toxicity to daphnia and other

aquatic invertebrates Exposure time: 48 h

> Test Type: static test Test substance: Fresh water

> Method: OECD Test Guideline 202

trientine:

: EC50 (Daphnia magna (Water flea)): 31.1 mg/l Toxicity to daphnia and other



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aquatic invertebrates Exposure time: 48 h

Test Type: static test

Test substance: Fresh water

Method: Directive 67/548/EEC, Annex V, C.2.

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (algae)): 2.43 mg/l

Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (algae)): 1 mg/l

Exposure time: 72 h Test Type: static test

Test substance: Fresh water Method: OECD Test Guideline 201

Lowest Observed Effect Concentration (Pseudokirchneriella

subcapitata (algae)): 2 mg/l Exposure time: 72 h Test Type: static test

EC10 (Pseudokirchneriella subcapitata (algae)): 1.89 mg/l

Exposure time: 72 h Test Type: static test

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (algae)): 43.5 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC50 (Pseudokirchneriella subcapitata (algae)): 37.1 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (algae)): 16 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

Toxicity to algae : ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l

Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

trientine:

Toxicity to algae : 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

M-Factor (Acute aquatic : No data available



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toxicity)

Components:

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Toxicity to fish (Chronic : NOEC (Brachydanio rerio (zebrafish)): 10.9 mg/l

toxicity) Exposure time: 30 d

Method: OECD Test Guideline 210

Lowest Observed Effect Concentration (Brachydanio rerio

(zebrafish)): 10.9 mg/l Exposure time: 30 d

Method: OECD Test Guideline 210

Components:

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Toxicity to daphnia and other : NOEC (Daphnia magna (Water flea)): 1.02 mg/l

aquatic invertebrates Exposure time: 21 d

(Chronic toxicity) Method: OECD Test Guideline 211

Lowest Observed Effect Concentration (Daphnia magna

(Water flea)): 1.02 mg/l Exposure time: 21 d

Method: OECD Test Guideline 211

trientine:

Toxicity to daphnia and other

aquatic invertebrates (Chronic toxicity)

: EC10 (Daphnia magna (Water flea)): 1.9 mg/l

Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

M-Factor (Chronic aquatic

toxicity)

: No data available

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Toxicity to microorganisms : EC50 (activated sludge): 421 mg/l

Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Toxicity to microorganisms : IC50 (Pseudomonas putida): 89 mg/l

Exposure time: 17 h

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

Toxicity to microorganisms : EC50 (Pseudomonas putida): 181 mg/l

Exposure time: 16 h
Test Type: static test
Test substance: Fresh

Test substance: Fresh water Method: DIN 38 412 Part 8

trientine:



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Toxicity to microorganisms : EC50 (activated sludge): 800 mg/l

Exposure time: 0.5 h Test Type: static test

Test substance: Fresh water

Components:

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Toxicity to soil dwelling : NOEC (E

organisms

: NOEC (Eisenia fetida (earthworms)): >= 1,000 mg/kg

Exposure time: 56 d

Method: OECD Test Guideline 222

EC50 (Eisenia fetida (earthworms)): >= 1,000 mg/kg

Exposure time: 56 d

Method: OECD Test Guideline 222

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial

organisms

: No data available

Ecotoxicology Assessment

Components:

trientine:

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine: Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

Toxicity Data on Soil : No data available

Other organisms relevant to

the environment

: No data available

Persistence and degradability

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Biodegradability : Test Type: aerobic

Method: OECD Test Guideline 301B

Remarks: According to the results of tests of biodegradability

this product is not readily biodegradable.

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Biodegradability : Inoculum: activated sludge

Concentration: 11.4 mg/l

Result: Not readily biodegradable.

Biodegradation: 7 % Exposure time: 28 d

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

Biodegradability : Result: Readily biodegradable.



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Biodegradation: 100 % Exposure time: 28 d Method: ISO Method, other

trientine:

Biodegradability : Inoculum: activated sludge

Result: Not readily biodegradable.

Biodegradation: 0 % Exposure time: 162 d

Method: OECD Test Guideline 301D

Inoculum: activated sludge Result: Not readily biodegradable.

Biodegradation: 20 % Exposure time: 84 d

Method: Inherent Biodegradability: Modified SCAS Test

Biochemical Oxygen

Demand (BOD)

: No data available

Chemical Oxygen Demand

(COD)

: No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon

(DOC)

: No data available

Physico-chemical

removability

: No data available

Stability in water : No data available

Photodegradation : No data available

Impact on Sewage

Treatment

: No data available

Bioaccumulative potential

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Bioaccumulation : Species: Other

Bioconcentration factor (BCF): 33.3

Remarks: The value is given based on a SAR/AAR approach using OECD Toolbox, DEREK, VEGA QSAR models (Chesar

models), etc.

Components:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:



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Partition coefficient: n- : Pow: 12.31 octanol/water : Method: QSAR

2,2,4(or 2,4,4)-trimethylhexane-1,6-diamine:

Partition coefficient: n- : log Pow: -0.3 (25 °C)

octanol/water Method: OECD Test Guideline 117

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

Partition coefficient: n-

octanol/water

: log Pow: 0.5

log Pow: -0.56 (25 °C)

pH: 11.6

Method: OECD Test Guideline 107

trientine:

Partition coefficient: n- : log Pow: -2.65 (20 °C)

octanol/water Method: OECD Test Guideline 117

Mobility in soil

Mobility : No data available

Components:

trientine:

Distribution among : Koc: 1584.9 - 5012

environmental compartments Method: OECD Test Guideline 106

Stability in soil : No data available

Other adverse effects

Environmental fate and

pathways

: No data available

Results of PBT and vPvB

assessment

: No data available

Endocrine disrupting

potential

: No data available

Adsorbed organic bound

halogens (AOX)

: No data available

Hazardous to the ozone layer

Ozone-Depletion Potential Not applicable

Additional ecological

information

: No data available

Global warming potential

(GWP)

: No data available



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SECTION 13: Disposal information

Disposal methods

Waste from residues : Can be landfilled or incinerated, when in compliance with local

regulations.

Where possible recycling is preferred to disposal or

incineration.

Send to a licensed waste management company.

Contaminated packaging Empty remaining contents.

> Dispose of as unused product. Do not re-use empty containers.

Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation under the Malaysia Environmental Quality Act 1974 and relevant regulations under the Act.

SECTION 14: Transport information

International Regulations

IATA

UN/ID No. : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(POLYAMIDE RESIN)

Class : 9 Packing group : 111

Miscellaneous Labels

Packing instruction (cargo

aircraft)

Packing instruction : 964

(passenger aircraft)

IMDG

UN number : UN 3082

Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

: 964

(POLYAMIDE RESIN)

Class : 9 Ш Packing group Labels : 9 EmS Code : F-A, S-F Marine pollutant : yes

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

Not applicable for product as supplied.

Hazchem Code : •3Z



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SECTION 15: Regulatory information

Safety, health, and environmental regulations specific for the hazardous chemical

MALAYSIA. OZONE DEPLETING SUBSTANCES : Not applicable

(ODS)

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.

Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

Other international regulations

The components of this product are reported in the following inventories:

CH INV : The formulation contains substances listed on the Swiss

Inventory

DSL : All components of this product are on the Canadian DSL

AICS : On the inventory, or in compliance with the inventory

NZIoC : Not in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : Not in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

TCSI : On the inventory, or in compliance with the inventory

TSCA : On the inventory, or in compliance with the inventory

Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

SECTION 16: Other information

Date format : dd.mm.yyyy

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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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